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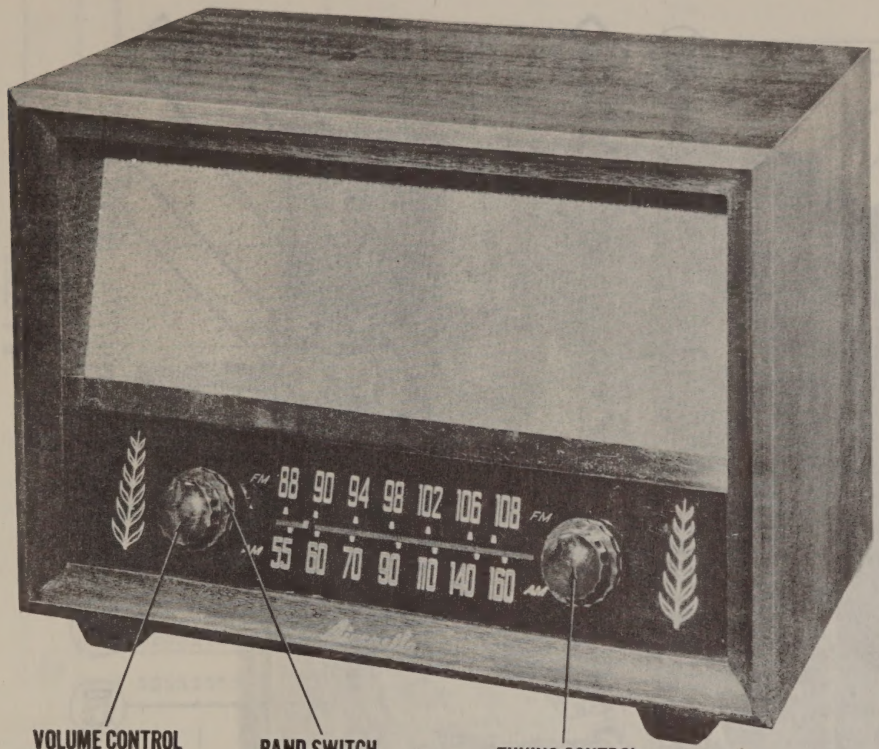
AIRCASTLE
MODEL 198



AIRCASTLE
MODEL 198

AIRCASTLE MODEL 198

TRADE NAME	Aircastle, Model 198
SUPPLIER	Spiegel Inc., 1061 W. 35th St., Chicago, Illinois
TYPE SET	AC Operated AM-FM Superheterodyne Receiver with Loop Antenna
TUBES(EIGHT)	Types 6BJ6 FM RF Amp., 12AT7 FM Converter, 12BE6 AM Converter, 6BJ6 1st IF Amp., 12BA6 FM 2nd IF Amp., 19T8 DET-AVC-AF, 35C5 Power Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC — RATING .39 Amp. at 117 Volts AC
TUNING RANGE-BROADCAST	535-1620KC — FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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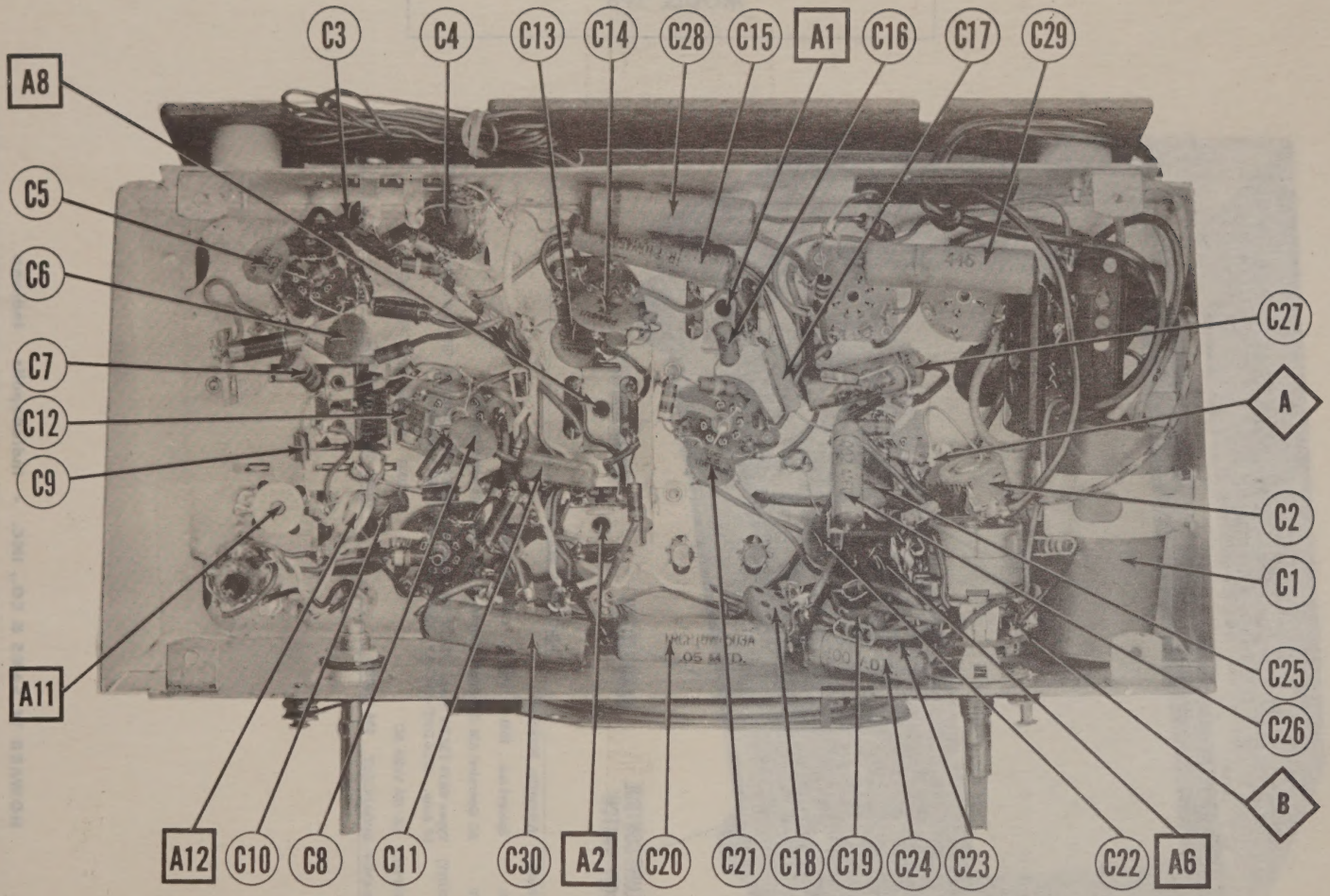
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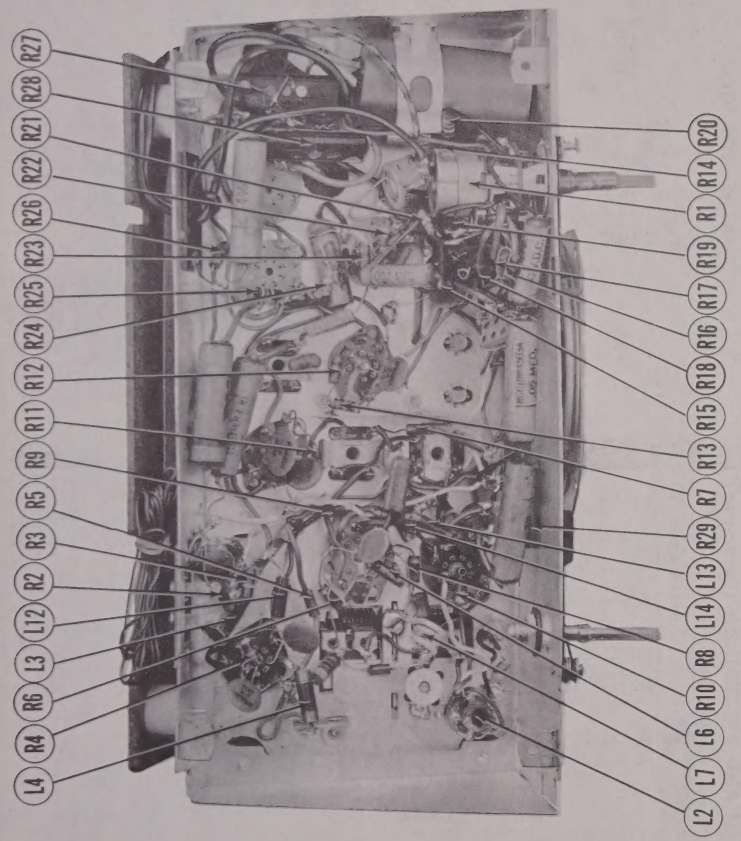

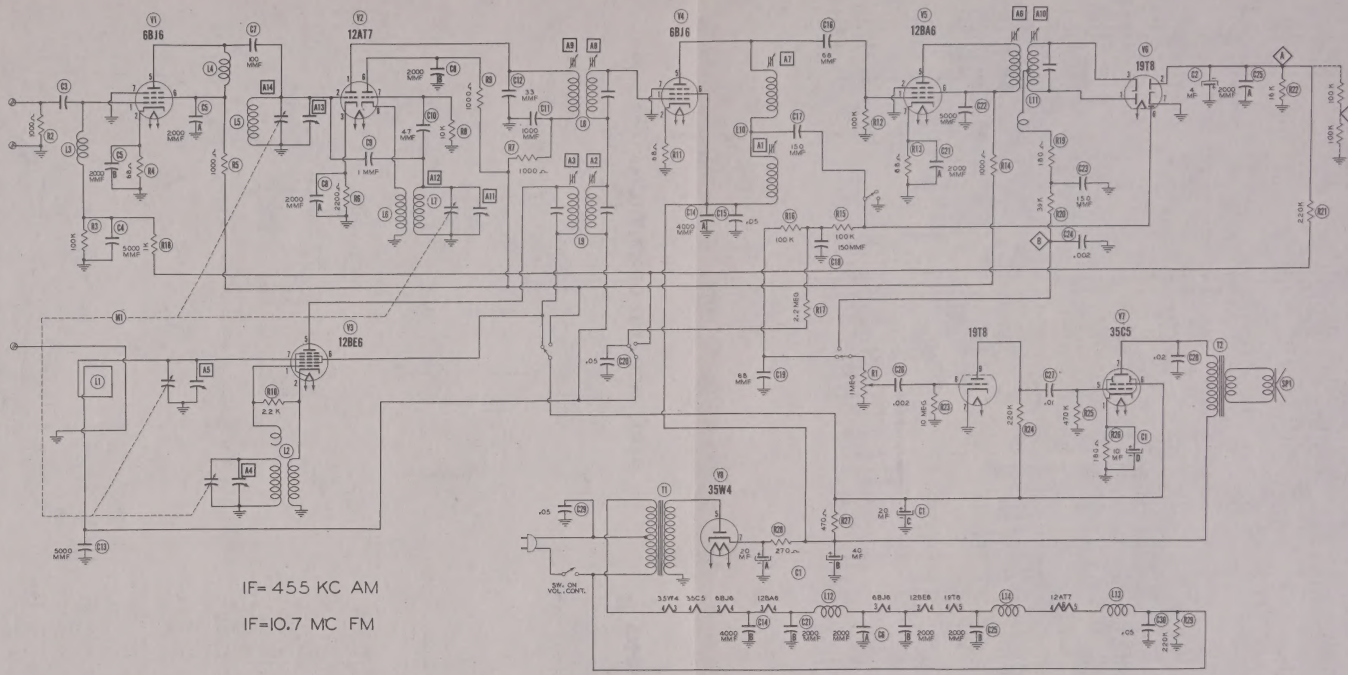

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡ V1	6BJ6	-.1VDC	.8VDC	245VAC	240VAC	100VDC	100VDC	0V.		
‡ V2	12AT7	110VDC	0V.	2.6VDC	213VAC	0V.	110VDC	5-8.5VDC	0V.	26.4VAC
V3	12BE6	5-11.5VDC	0V.	242VAC	230VAC	125VDC	125VDC	-.1VDC		
V4	6BJ6	-.1VDC	1.1VDC	266VAC	260VAC	115VDC	115VDC	0V.		
‡ V5	12BA6	0V.	0V.	250VAC	245VAC	100VDC	100VDC	1.8VDC		
V6A	19T8	-.2VDC	-.4VDC	-.2VDC	230VAC	213VAC	-.3VDC	0V.	-.3VDC	55VDC
‡ V6B	19T8	-.2VDC	-.4VDC	-.2VDC	230VAC	213VAC	0V.	0V.	-.3VDC	55VDC
V7	35C5	9VDC	0V.	266VAC	260VAC	0V.	115VDC	112VDC		
V8	35W4	0V.	0V.	250VAC	235VAC	240VAC	230VAC	240VDC		

‡TAKEN WITH VACUUM TUBE VOLTMETER.
‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡ V1	6BJ6	980KΩ	68Ω	450Ω	450Ω	11.5KΩ	11.5KΩ	0Ω		
‡ V2	12AT7	11.5KΩ	0Ω	2.8Ω	811Ω	8.3Ω	11.5KΩ	10KΩ	2.5Ω	86.5Ω
V3	12BE6	525Ω	1Ω	450Ω	485Ω	125Ω	127Ω	2.3Meg.		
V4	6BJ6	2.3 Meg.	68Ω	811Ω	811Ω	174Ω	174Ω	0Ω		
‡ V5	12BA6	100KΩ	0Ω	811Ω	450Ω	11.3KΩ	11.3KΩ	68Ω		
V6A	19T8	Inf.	18KΩ	Inf.	450Ω	811Ω	1.8 Meg.	0Ω	10 Meg.	122KΩ
‡V6B	19T8	1 Meg.	18KΩ	1 Meg.	450Ω	811Ω	0Ω	0Ω	10 Meg.	122KΩ
V7	35C5	18Ω	470KΩ	811Ω	811Ω	470Ω	174Ω	150Ω		
V8	35W4	Inf.	Inf.	811Ω	450Ω	68Ω	450Ω	100Ω		

‡ Measured from pin 7 of V6.
# Measured from power switch.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn tuning gang fully closed and set pointer 1 3/32 inches to the right of the center of the volume control shaft.

AM ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to stator of ant. section of tuning gang. Low side to chassis.	455KC (400 ~ Mod.)	AM (CCW)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output.
2.		Loop	1620KC	"	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	"	Tune for max. output.	"	A5	"
4.		Loop	600KC	"	"	"		Reinstall set in cabinet and check to see if pointer is at 600KC. If necessary bend the end plates of the oscillator section of tuning gang for proper tracking. If plates are changed repeat steps 3 and 4. Adjust end plates of antenna section for maximum output.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ~ modulation and 450KC sweep. Use 120 ~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to pin 2 (Grid) of 12AT7 (V2). Low side to chassis.	10.7MC (450KC Sweep)	FM (CW)	Point of non-interference	Vert. Amp. to Point A Low side to chassis.	A6, A7, A8, A9	Disconnect stabilizer capacitor C2. Adjust for maximum amplitude and symmetry as per Fig 1.
6.	.01MFD	"	"	"	"	Vert. Amp. to Point A Low side to chassis.	A10, A6	Reconnect capacitor C2. Adjust A10 so 10.7MC occurs at center of crossover lines. Slightly retouch A6 for maximum amplitude and straightness of crossover lines. Continue with step 8.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point A to chassis. The junction of these two resistors is alignment Point B as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to pin 1 (Grid) of 12BA6 (V5). Low side to chassis.	10.7MC (Unmod.)	FM (CW)	Tuning gang fully open	DC Probe to Point A Common to chassis.	A6	Adjust for maximum deflection.
6.	.01MFD	"	"	"	"	DC Probe to Point B Common to Point C	A10	Adjust for zero reading. A positive and negative will be obtained on either side of the correct setting.
7.	.01MFD	High side to pin 2 (Grid) of 12AT7 (V3). Low side to chassis.	"	"	"	DC Probe to Point A Common to chassis.	A7, A8, A9	Adjust for maximum deflection.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	300Ω carbon res.	High side to ungrounded FM ant. terminal. Low side to chassis.	109MC (Unmod.)	FM	Tuning gang fully open	DC Probe to Point A Common to chassis.	A11	Adjust for maximum deflection.
9.	"	"	87.5MC	"	Tuning gang fully closed	"	A12	Expand or compress coil turns for maximum deflection. Repeat steps 8 and 9 until no further improvement can be made.
10.	"	"	106MC	"	Tune for max. deflection.	"	A13	Adjust for maximum deflection.
11.	"	"	90MC	"	"	"	A14	Expand or compress coil turns for maximum deflection. Repeat steps 10 and 11 until no further improvement can be made.

FIG. 1

FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA AIRCASTLE PART No.	REPLACEMENT DATA STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	FM RF Amp.	6BJ6	6BJ6	7CM	
V2	FM Converter	12AT7	12AT7	9A	
V3	FM Converter	12AT7	12AT7	9A	
V4	1st IF Amp.	6BJ6	6BJ6	7CM	
V5	FM 2nd IF Amp.	12BA6	12BA6	7BK	
V6	FM Det. & AVC	12AU7	12AU7	9CV	
V7	Power Output	35C5	35C5	7CY	
V8	Rectifier	35W4	35W4	5BQ	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	VOLT	REPLACEMENT DATA AIRCASTLE PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	150		PRS8454D	E2423I3C		TA-304	Filter Blue
B	20	150		SPS8510			X1A-10	Filter Green
C	20	150						Filter Red
D	10	25						Output Cath. Bypass Yellow
E	4	50						Output Cath. Bypass-Orange
C2	47		CC-047-8	PRS8150/4	BR550	GP3K-47	TVA-13	RF Coupling
C3	2000		CC-1-1	1468-00005	5W5Q5	GP3M-002	1FM-45	AVC Filter
C4A	2000		CC-1-1	1467-005	1D5D5	GP3M-002	29C1	Mixer Plate Decoupling
B	2000		1467-002	1W3D2	GP3M-002	29C5	RF Cathode Bypass	
C5A	2000		CC-2-1	1467-003	1W3D2	GP3M-002	29C5	RF Filament Bypass
B	2000		1467-003	1W3D2	GP3M-002	29C5	RF Filament Bypass	
C7	100		CC-10J-7	1468-0001	5W5T1	GP3K-100	1FM-31	RF Coupling
C8A	2000		CC-2-1	1467-003	1W3D2	GP3M-002	29C5	Mixer Plate Bypass
B	2000			1467-002	1W3D2	GP3M-002		Osc. Plate Bypass
C9	2		CSP-1	1468-00004	5W5Q6	GP3K-47	1FM-45	Osc. Coupling
C10	100		CC-10J-8	1468-00005	1W5D1	GP2L-101	1FM-31	AVC Coupling
C11	1000	500	CM-103	468-001			1FM-31	Mixer Plate Decoupling
C12	33	500	CMO-033-9					Fixed Trimmer
C13	1000	500	CM-102	1467-005	1D5D5	B1I-005	29C1	AVC Bypass
C14A	4000		CC-2-5	1467-004	1D5D4	GP3M-0047	36C2	RF Bypass
B	4000			1467-004	1D5D4	GP3M-0047		1st IF Fil. Bypass
C15	68	400	CP-509-1	1468-000075	5W5Q7	GP3K-68	TM-15	1st IF Coupling
C16	68	500	CC-068-7	1468-000075	5W5Q7	GP3K-68	1FM-475	IF Coupling
C17	150	500	CM-151-1	1468-00015	5W5T15	GP3K-150	1FM-315	IF Coupling
C18	150	500	CM-151-1	1468-00015	5W5T15	GP3K-150	1FM-315	Diode RF Filter
C19	68		CC-068-7	1468-000075	5W5Q7	GP3K-68	1FM-475	Diode RF Filter
C20	2000	400	CP-503-1	P488-05	GT4S5		TM-15	AVC Filter
C21A	2000		CC-1-1	1467-002	1W3D2	GP3M-002	29C5	2nd IF Cathode Bypass
B	2000			1467-002	1W3D2	GP3M-002		2nd IF Fil. Bypass
C22	1000	500	CM-102	1467-004	1D5D4	GP3M-0047	36C2	2nd IF Decoupling
C23	150	500	CM-151-2	1468-00015	5W5T15	GP3K-150	29C1	Diode Load-Hi-Q
C24	400		CC-2-3	P888-002	GT6D2	GP2M-002	29C5	De-emphasis
C25A	.002	400		P888-009	GT6D2	GP2M-002	TM-23	Audio Coupling
B	2000		CC-2-1	1467-002	1W3D2	GP2M-002	29C5	RF Bypass
C26	.002	400	CP-202-2	P888-002	GT6D2	GP2M-002	TM-23	Audio Coupling
C27	.05	400	CP-503-2	P488-05	GT4S5	GP2L-503-05	TM-15	Audio Decoupling
C28	.01	600	CP-203-20	P1088-02	GT10S2		MB-12	Audio Coupling
C29	.05	400	CP-503-1	P488-05	GT4S5		TM-15	Lim Filter
C30	.05	400	CP-503-1	P488-05	GT4S5		TM-15	Lim Filter

CONTROLS

ITEM No.	RATING RESISTANCE	WATTS	REPLACEMENT DATA AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	1	VC-17			Volume control and AC switch
B	Switch					FM-AM switch

FOLDER 1

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIRCASTLE PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L1	AM Loop	.20	1.5Ω	LP-13		
L2	AM Osc.	.8Ω	9Ω	LC-9	14-1060 ¶	¶ Add 50MMF from Osc. Grid to high side of tuning cap.
L3	Grid Choke	.5Ω		LC-15		
L4	Plate Choke	1.5Ω		LC-14		
L5	FM RF Coil	0Ω		LC-12		
L6	FM RF Choke	2.1Ω	1Ω	LC-16		
L7	FM Osc.	.0Ω		LC-11		
L8	1st FM IF	.8Ω	1Ω	LF-32	16-6078	
L9	1st AM IF	.8Ω	1Ω	LF-30		
L10	2nd IF FM	.1Ω		LF-31		
	2nd IF AM	8.5Ω				
L11	Ratio Det.	1.5Ω	.8Ω	LF-33		
L12	Fil. Choke	.3Ω		LC-17		
L13	Fil. Choke	.3Ω		LC-13		
L14	Fil. Choke	.3Ω		LC-18		

MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
M1	2 Gang Var. Cap.	CV-17	(Bl-587MMF, 24-163MMF)
	Dial Pointer	PN-17	
	Cabinet	CB-198	
	Back	CBA-33	Assembly
	Knob	KN-26	Large
	Knob	KN-27	Small

SET 83

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	WATTS	REPLACEMENT DATA AIRCASTLE PART No.	IDENTIFICATION CODES PART No.	
R2	100Ω	1	RC-102-1	BTS-100Ω	Ant. Loading
R3	100kΩ	1	RC-104-1	BTS-100K	FM RF Grid
R4	680Ω	1	RC-682-3		FM RF Cathode
R5	100Ω	1	RC-102-1	BTS-100Ω	FM Conv. Grid Loading
R6	2200Ω	1	RC-222-3	BTS-2200	FM Conv. Cathode
R7	100kΩ	1	RC-104-1	BTS-100K	FM Conv. Plate Decoupling
R8	100Ω	1	RC-102-1	BTS-100Ω	FM Osc. Grid
R9	1000Ω	1	RC-102-3	BTS-1000	FM Osc. Plate
R10	100Ω	1	RC-102-1	BTS-100Ω	AM Osc. Grid
R11	680Ω	1	RC-682-3	BTS-22K	AM Osc. Plate
R12	100kΩ	1	RC-104-1		FM 2nd IF Grid
R13	100kΩ	1	RC-104-1	BTS-100K	FM 2nd IF Cathode
R14	1000Ω	1	RC-102-3	BTS-1000	FM 2nd IF Plate Decoupling
R15	100kΩ	1	RC-104-1	BTS-100K	Diode Filter
R16	100kΩ	1	RC-104-1	BTS-100K	AVC Network
R17	2.2 Meg.	1	RC-225-1	BTS-2.2 Meg.	AVC Network
R18	1000Ω	1	RC-102-3	BTS-1000	Balancing
R19	100Ω	1	RC-102-1	BTS-100Ω	Balancing
R20	39kΩ	1	RC-393-2	BTS-39K	AVC Network
R21	220kΩ	1	RC-224-1	BTS-220K	AVC Network
R22	2200Ω ± 5%	1	RC-222-1		AF Diode Load
R23	10 Meg.	1	RC-106-1	BTS-10 Meg.	AF Grid
R24	220kΩ	1	RC-224-1	BTS-220K	AF Plate
R25	220kΩ	1	RC-224-1	BTS-220K	Output Grid
R26	18Ω	2	RW-181-2	BW-18-140	Output Cathode
R27	470Ω	2	RW-471-8	BW-2-470	Filter, Wire Wound
R28	15Ω	2	RW-150-8	BW-2-150	Filter, Wire Wound
R29	220kΩ	1	RC-224-1	BTS-220K	Isolation

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC.-1	SEC.-2	SEC.-3	REPLACEMENT DATA AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	105-125 Volts 60 Cycles AC Transf. at 117VAC (at .39A	1450 C.T. 145MADC			TR-19			

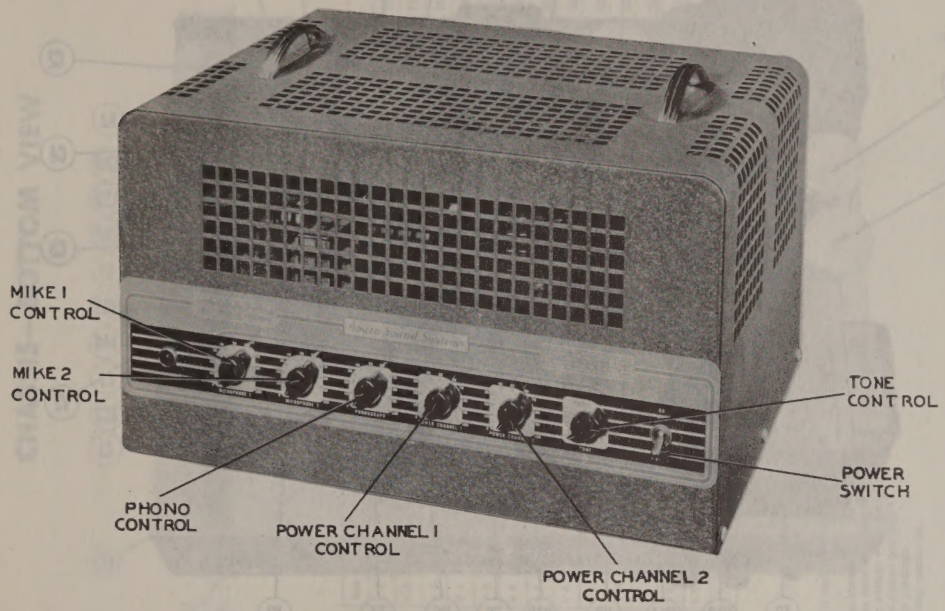
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC.	DC RES. PRI.	SEC.	REPLACEMENT DATA AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T2	25000	3.4Ω	285Ω	.6Ω	TR-109	A-3939	A-3935	RO-2 #	# Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS TYPE		REPLACEMENT DATA AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
SP1	12" P.M.	V. C. IMP.	SP-4L-109	8T-13 **	44ST * ‡	* Racecut output transformer.
	12" P.M.	V. C. IMP.		8T-13-1 **		** Use new matching transformer.
SP2	KONE PM	V. C. IMP.		44ST-7P-X		‡ Use universal mounting brackets provided
	8 1/16"	9/16"				

CHASSIS—TOP VIEW



DAVID BOGEN
MODEL E75

DAVID BOGEN
MODEL E75

DAVID BOGEN MODEL E75

TRADE NAME	David Bogen, Model E75
MANUFACTURER	David Bogen Co., Inc., 663 Broadway, New York, New York
TYPE SET	AC Operated 3 Channel Audio Amplifier
TUBES(FOURTEEN)	Types 6SF5 Mic. #1 Pre Amp., 6SF5 Mic. #2 Pre Amp., 6SL7GT 1st AF Amp., 6SL7GT 2nd AF Amp., (2) 6F6G Power Output, (4) 6L6G Power Output, (2) 7Z4 Bias Rectifier, (2) 5X4G or (2) 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC RATING 2.33 Amp. at 117 Volts AC

INPUT

Phonograph-There is a low gain input channel for use with a high impedance type of phono pickup. A shielded lead should be used at all times between the phono pickup and amplifier in order to prevent hum and noise pickup. The input terminal strip for phono connection is located on the rear of the pre-amplifier chassis. It is marked "PHONO". Connect the shield to the post marked GND and the lead to the remaining post.

Microphone-High impedance types of microphones, such as Velocity, Crystal or Dynamic may be connected to the two screw type microphone connectors.

OUTPUT

Speakers having their own field supply or PM types should be used. Either speaker, voice coils or 500 ohm lines may be connected to the output terminal strips in accordance with the impedance in ohms as shown in the diagram. Use wire #18 between amplifier and speakers. If the distance is over 100 feet, #16 or #14 wire should be used to prevent loss of volume and quality of tone. The E75 may be used as a single 70 watt amplifier by parallelling both output stages. This is done by connecting the corresponding output terminals on each channel. When parallelling any taps, the resulting impedance will be half, for example, if the two 500 ohm taps are connected, the resulting output impedance will be 250 ohms. When using the E75 as a single amplifier, the "Power Channel" controls must be turned all the way up. The toggle switch located next to the output strips indicates the power channel that delivers power to the preamplifier. Should that power channel fail, throw the switch to the other power channel, enabling the amplifier to remain in operation with a power output of 35 watts. CAUTION Never turn up the Power Channel Control on an output channel unless suitable speakers are connected to that channel. To do so may permanently injure the output transformers.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

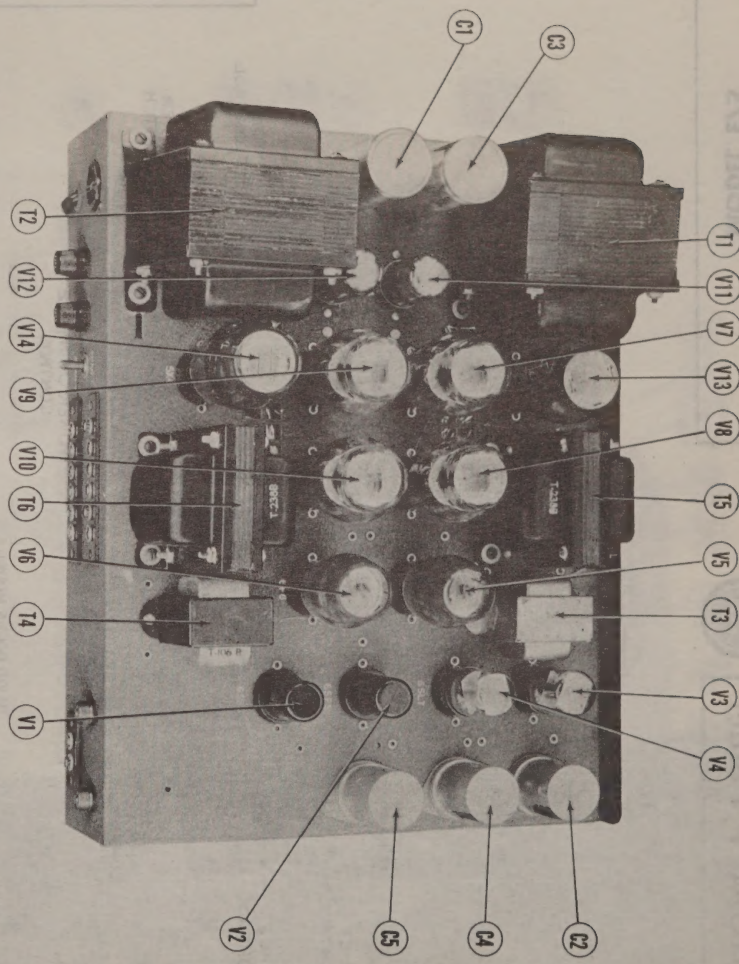
ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		DAVID BOGEN PART No.	STANDARD REPLACEMENT		
V1	Mic. #1 Pre Amp.	6SF5	6SF5	6AB	
V2	Mic. #2 Pre Amp.	6SF5	6SF5	6AB	
V3	1st AF Amp.	6SL7GT	6SL7GT	8BD	
V4	2nd AF Amp.	6SL7GT	6SL7GT	8BD	
V5	Driver	6F6G	6F6G	7S	
V6	Driver	6F6G	6F6G	7S	
V7	Power Output	6L6G	6L6G	7AC	
V8	Power Output	6L6G	6L6G	7AC	
V9	Power Output	6L6G	6L6G	7AC	
V10	Power Output	6L6G	6L6G	7AC	
V11	Bias Rectifier	7Z4	7Z4	5AB	
V12	Bias Rectifier	7Z4	7Z4	5AB	
V13A	Rectifier	5X4G	5X4G	5Q	
B	Rectifier	5U4G	5U4G	5T	
V14A	Rectifier	5X4G	5X4G	5Q	
B	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: DAVID BOGEN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	8	500		PRVC475/8-8	EB10018		CL-88	Filter-Red
B	8	500						Filter-Blue
C2A	5	450		AF2222J	UP5Q45		EL-410	▪ Filter
B	5	450						▲ Filter
C	5	450						Filter
D	5	450						■ Mic. #2 Pre-Amp. Decoup.
C3A	8	500		PRVC475/8-8	EB10018		CL-88	Filter-Red
B	8	500						Filter-Blue
C4A	5	450		AF2222J	UP5Q45		EL-410	▪ Filter
B	5	450						▲ Filter
C	5	450						Filter
D	5	450						■ 1st AF Plate Decoupling
C5A	5	450		AF2222J	UP5Q45		EL-410	▪ 2nd AF Plate Decoupling
B	5	450						■ Mic. #1 Pre-Amp. Decoup.
C	5	450						▲ 2nd AF Plate Decoupling
D	5	450						1st AF Plate Decoupling
C6	100	50		PRS50/100	BRH501		TVA-17	Mic. #1 Pre-Amp. Cath. Bypass
C7	100	50		PRS50/100	BRH501		TVA-17	Mic. #2 Pre-Amp. Cath. Bypass
C8	100	25		PRS25/100	BRH251A		UHC-102	1st AF Cathode Bypass
C9	25	25		PRS25/100	BR252A		TVA-6	1st AF Cathode Bypass
C10	50	50		PRS50/50	BR505		TVA-16	Driver Cath. Bypass
C11	50	50		PRS50/50	BR505		TVA-16	Driver Cath. Bypass
C12	50	50		PRS50/50	BR505		TVA-16	Bias Filter
C13	50	50		PRS50/50	BR505		TVA-16	Bias Filter
C14	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C15	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C16	.006	600		P688-006	GT6D6	GP2M-0056	TM-26	Audio Coupling
C17	.006	600		P688-006	GT6D6	GP2M-0056	TM-26	Audio Coupling
C18	240	500		1468-00025	5W5T25	GP2K-250	1FM-325	Audio Coupling
C19	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Tone Compensation
C20	.1	600		P688-1	GT6P1		TM-1	Audio Coupling
C21	.1	600		P688-1	GT6P1		TM-1	Audio Coupling
C22	250	500		1468-00025	5W5T25	GP2K-250	1FM-325	Tone Compensation
C23	240	500		1468-00025	5W5T25	GP2K-250	1FM-325	Tone Compensation
C24	240	500		1468-00025	5W5T25	GP2K-250	1FM-325	Output Grid Bypass
C25	240	500		1468-00025	5W5T25	GP2K-250	1FM-325	Output Grid Bypass
C26	.006	600		P688-006	GT6D6		TM-26	RF Bypass
C27	.006	600		P688-006	GT6D6		TM-26	RF Bypass
C28	.01	600		P688-01	GT6S1		TM-11	Output Plate Bypass
C29	.01	600		P688-01	GT6S1		TM-11	Output Plate Bypass
C30	.01	600		P688-01	GT6S1		TM-11	Output Plate Bypass
C31	.01	600		P688-01	GT6S1		TM-11	Output Plate Bypass
C32	.1	600		P688-1	GT6P1		TM-1	Line Filter

CHASSIS—TOP VIEW

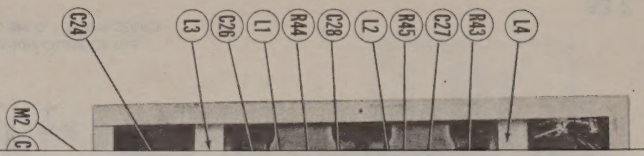


PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	David Bogen PART No.	IRC PART No.	CLAROSTAT PART No.	
R1	500KΩ	½	V-202-L	Q13-133	M-60-Z	Microphone 1 volume control
R2	500KΩ	½	V-202-L	Q13-133	M-60-Z	Microphone 2 volume control
R3	100KΩ	½	V-211-LA	Q13-128	M-51-Z	Phono volume control
R4	500KΩ	½	V-202-L	Q13-133	M-60-Z	Power channel 1 volume control
R5	500KΩ	½	V-202-L	Q13-133	M-60-Z	Power channel 2 volume control
R6	Inf.	½	V-129-C			Tone control

CHASSIS—BOTTOM VIEW



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SF5	0V.	2.3VDC	0V.	245VDC	245VDC	0V.	#	#
V 2	6SF5	0V.	2.3VDC	0V.	0V.	250VDC	0V.	#	#
V 3	6SL7GT	0V.	220VDC	2.7VDC	0V.	240VDC	2.8VDC	#	#
V 4	6SL7GT	0V.	210VDC	2VDC	0V.	240VDC	2VDC	#	#
V 5	6F6G	0V.	#	320VDC	320VDC	.1VDC	0V.	#	25VDC
V 6	6F6G	0V.	#	320VDC	320VDC	.2VDC	0V.	#	25VDC
V 7	6L6G	0V.	#	430VDC	340VDC	-34VDC	0V.	#	0V.
V 8	6L6G	0V.	#	430VDC	340VDC	-34VDC	0V.	#	0V.
V 9	6L6G	0V.	#	430VDC	340VDC	-34VDC	0V.	#	0V.
V 10	6L6G	0V.	#	430VDC	340VDC	-34VDC	0V.	#	0V.
V 11	7Z4	#	0V.	-34VDC	44VAC	50VAC	-34VDC	50VAC	#
V 12	7Z4	#	0V.	-34VDC	50VAC	44VAC	-34VDC	50VAC	#
V 13	5X4G	0V.	445VDC	530VAC	530VAC	530VAC	530VAC	445VDC	445VDC
V 14	5X4G	0V.	445VDC	530VAC	530VAC	530VAC	530VAC	445VDC	445VDC

6.3VAC measured across filaments.

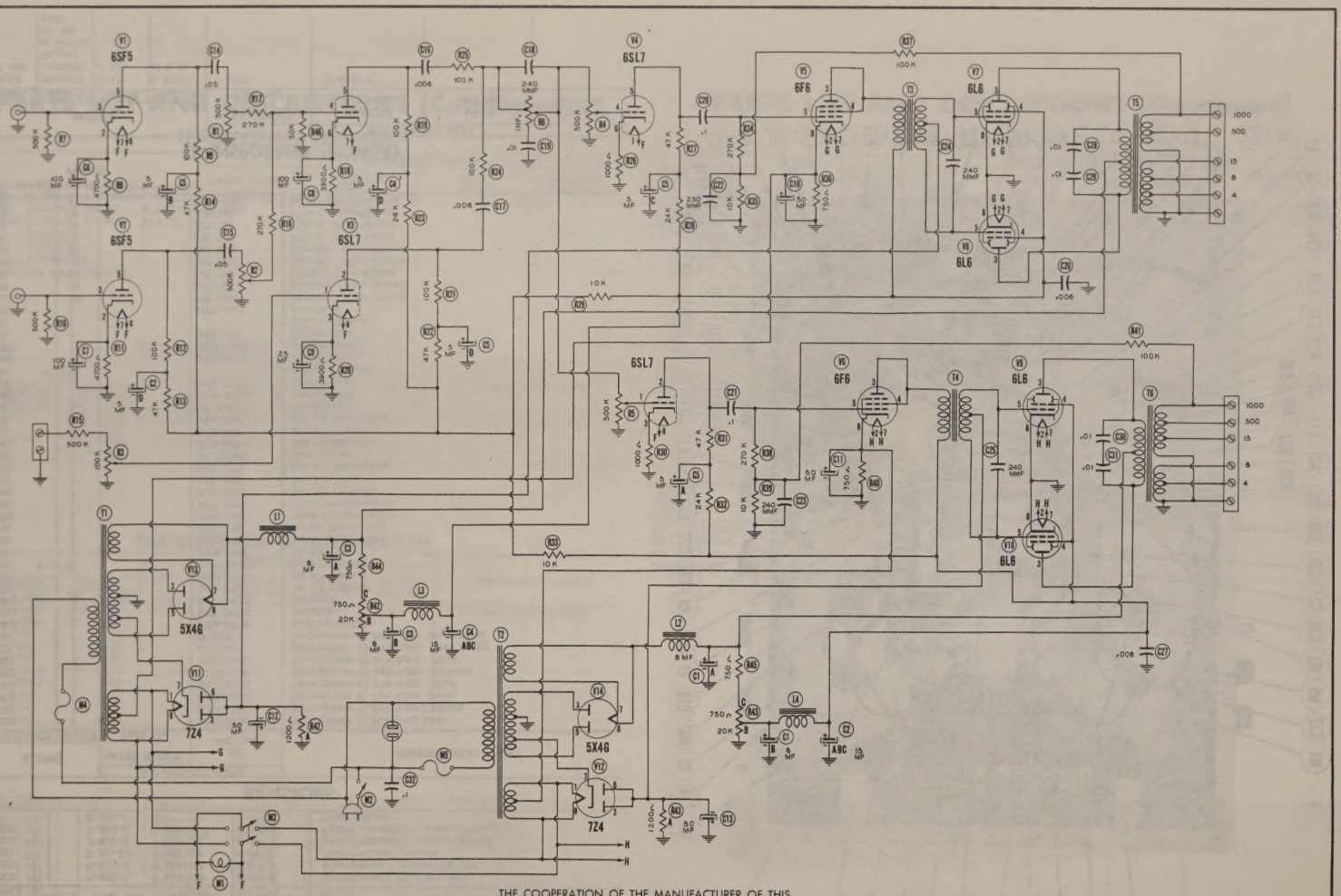
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SF5	0Ω	4.7KΩ	500KΩ	♦160KΩ	♦160KΩ	0Ω	750Ω	750Ω
V 2	6SF5	0Ω	4.7KΩ	500KΩ	Inf	♦160KΩ	Inf	750Ω	750Ω
V 3	6SL7GT	160Ω	♦160KΩ	4KΩ	150KΩ	♦135KΩ	4KΩ	750Ω	750Ω
V 4	6SL7GT	9Ω	♦75KΩ	1000Ω	8Ω	†75KΩ	1000Ω	750Ω	750Ω
V 5	6F6G	0Ω	750Ω	†2.5KΩ	†2.5KΩ	260KΩ	Inf	750Ω	750Ω
V 6	6F6G	0Ω	750Ω	♦2.5KΩ	♦2.5KΩ	260KΩ	Inf	750Ω	750Ω
V 7	6L6G	0Ω	750Ω	†140Ω	†2KΩ	1.5KΩ	Inf	750Ω	0Ω
V 8	6L6G	0Ω	750Ω	†140Ω	†2KΩ	1.5KΩ	Inf	750Ω	0Ω
V 9	6L6G	0Ω	750Ω	♦140Ω	♦2KΩ	1.5KΩ	Inf	750Ω	0Ω
V 10	6L6G	0Ω	750Ω	♦140Ω	♦2KΩ	1.5KΩ	Inf	750Ω	0Ω
V 11	7Z4	750Ω	Inf	1.2KΩ	5.5Ω	5.5Ω	1.2KΩ	5.5Ω	750Ω
V 12	7Z4	750Ω	Inf	1.2KΩ	5Ω	5Ω	1.2KΩ	5Ω	750Ω
V 13	5X4G	Inf	13KΩ	60Ω	60Ω	58Ω	58Ω	13KΩ	13KΩ
V 14	5X4G	Inf	15KΩ	57Ω	57Ω	52Ω	52Ω	15KΩ	15KΩ

† Measured from pin 8 of V13.
♦ Measured from pin 8 of V14.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All control at minimum proper output load connected.

SET 83 FOLDER 2



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FIRESTONE MODEL 13-G-5

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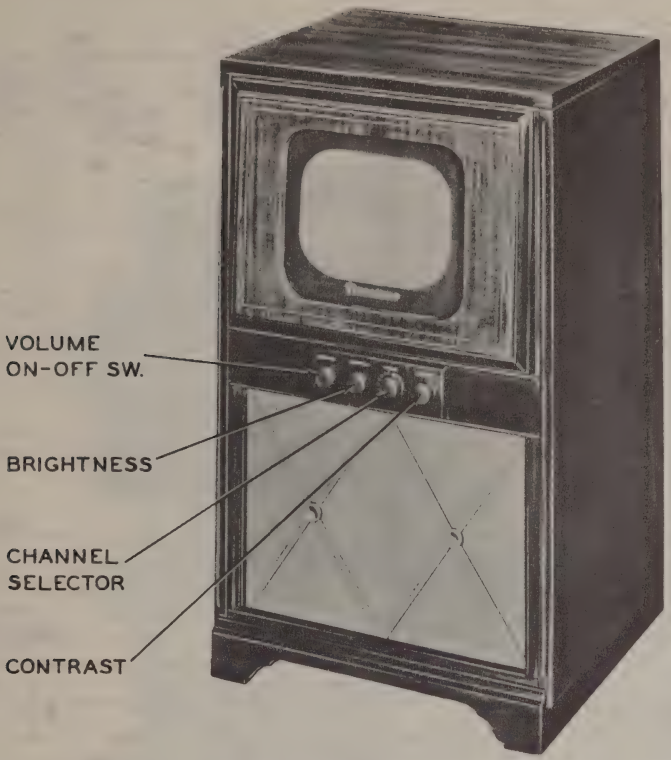
Date 2/50 Set No. 83—Folder No. 3

FIRESTONE
MODEL 13-G-5 (Code 291-9-651)



FIRESTONE
MODEL 13-G-5 (Code 291-9-651)

TRADE NAME	Firestone Model 13-G-5 (Code 291-9-651)
SUPPLIER	The Firestone Tire and Rubber Co., 1200 Firestone Parkway, Akron, Ohio .
TYPE SET	Television Receiver
TUBES	Twenty-Three
POWER SUPPLY	110-120 Volts-60 Cycles AC RATING: 1.98 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 through 13

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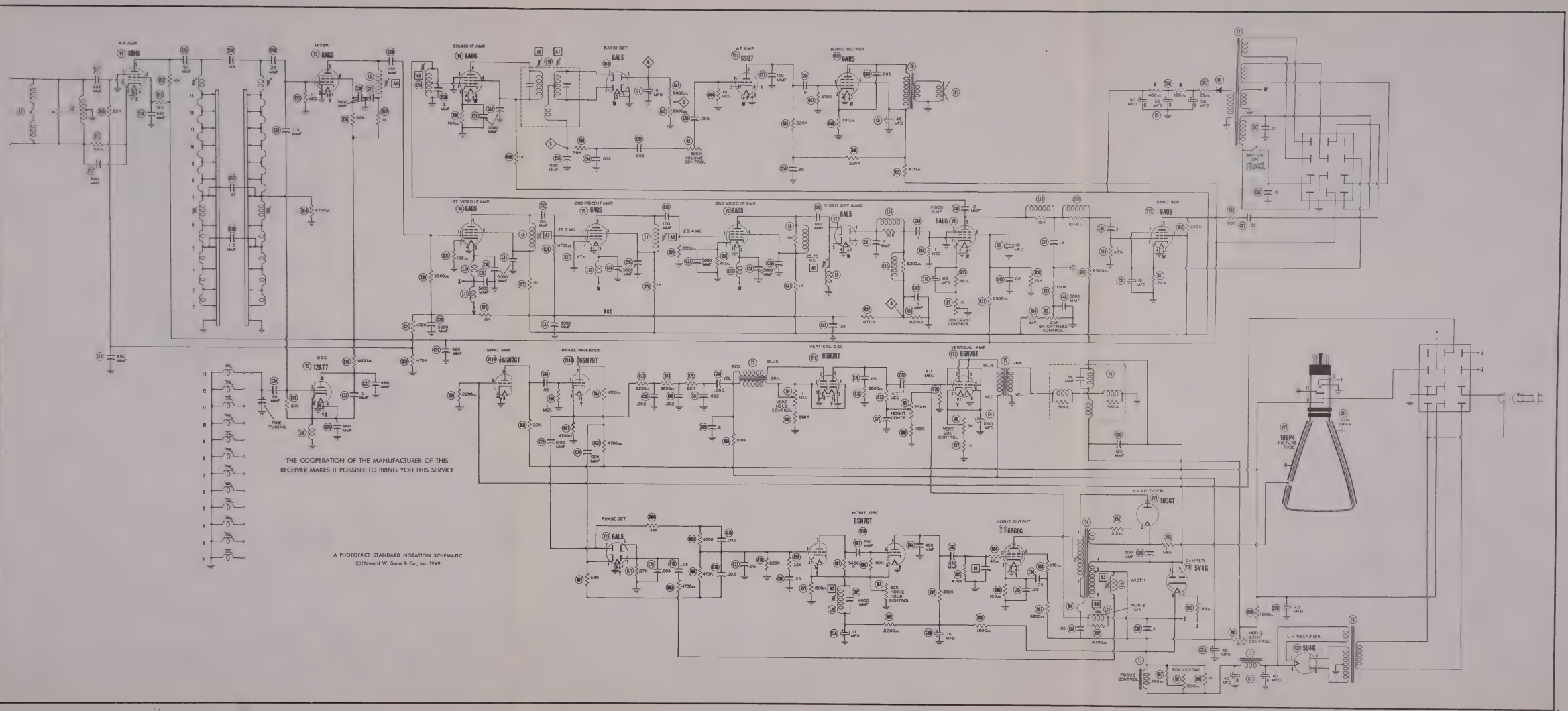

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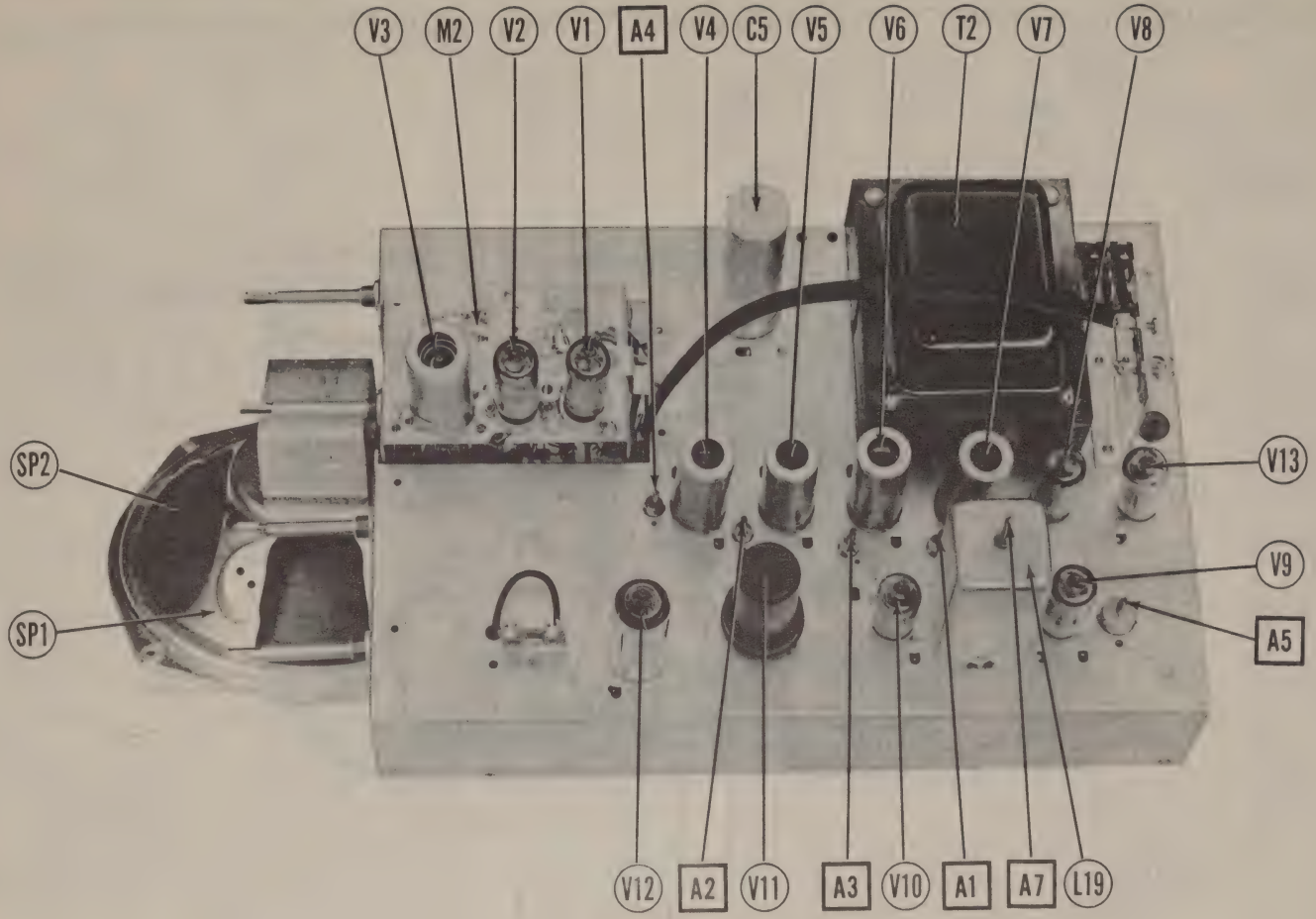
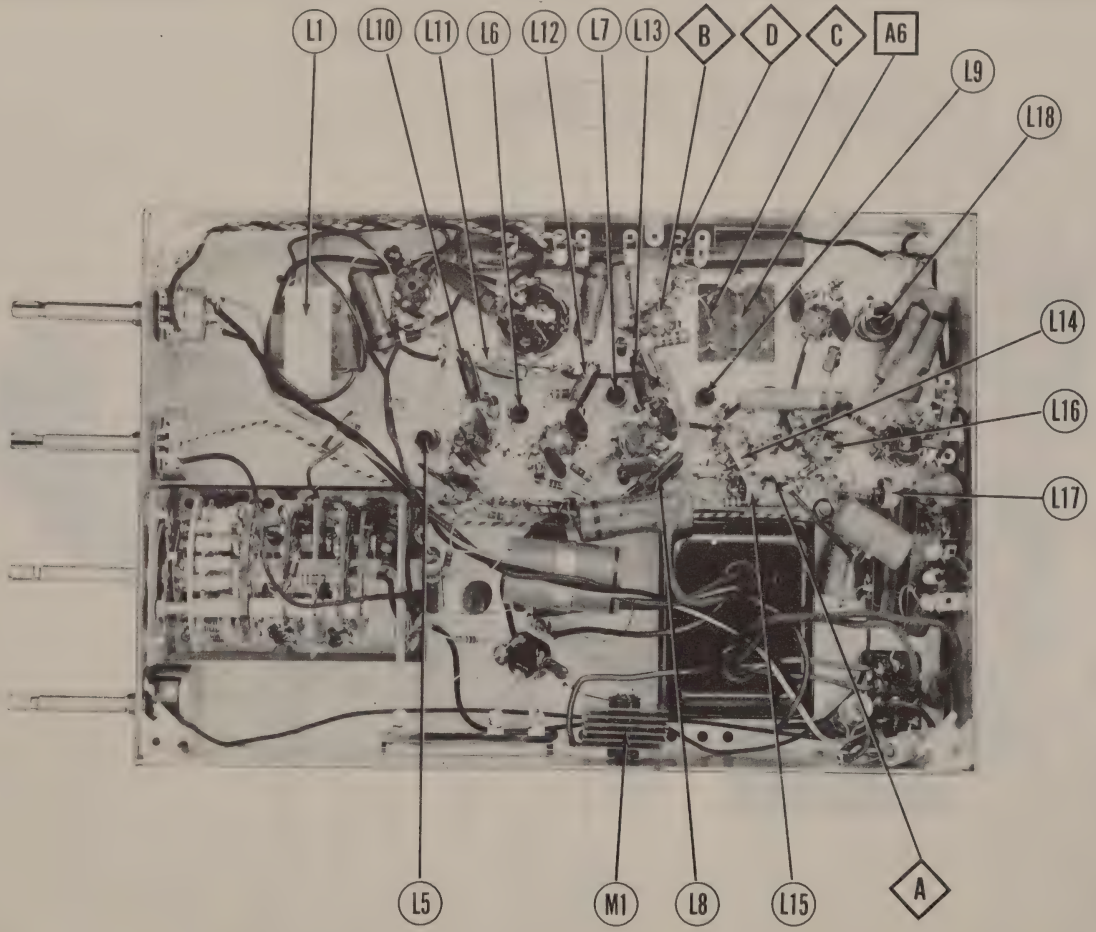
MODEL 13-G-5 (Code 291-9-651)



RF-IF CHASSIS-TOP VIEW



RF-IF CHASSIS-BOTTOM VIEW TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The interconnecting cable between the two chassis must be connected for complete alignment.
If receiver is to be aligned with picture tube removed, remove horizontal oscillator tube (V16) to remove shock hazard.

VIDEO IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Remove local oscillator tube (V3) to prevent erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.		High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	25.75MC (Unmod.)	Any	DC Probe to Point (A) Common to chassis.	A1,A2	Adjust for maximum deflection.
2.		"	23.4MC	"	"	A3,A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.		High side to ungrounded tube shield floating over mixer tube 6AU5 (V2). Low side to chassis.	24MC (10MC Sweep)	25.75MC 21.25MC	Any	Vert. Amp. to Point (A) Low side to chassis.		Check response as per Fig 1. If necessary slightly retouch A1, A2, A3, A4 to correctly position markers.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 5 (Plate) of 6AU6 (V8). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (B) Common to chassis.	A5,A6	Adjust for maximum deflection.
5.	.01MFD	"	"	"	DC Probe to Point (C) Common to Point (D)	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 5 (plate) of 6AU6 (V8). Low side to chassis.	4.5MC (1MC Sweep)	4.5MC	Any	Vert. Amp. to Point (B) Low side to chassis.	A5,A6	Disconnect stabilizer cap. C7. Adjust for maximum amplitude and symmetry as per Fig 2.
5.	.01MFD	"	"	"	"	Vert. Amp. to Point (C) Low side to chassis.	A7	Reconnect stabilizer cap. C7. Adjust A7 so 10.7MC marker occurs at center of diagonal line. Slightly retouch A6 for maximum amplitude and straightness of diagonal line.

OSCILLATOR ALIGNMENT

The RF Amplifier and mixer adjustments are pre-set at the factory and are very stable, and normally do not require adjustment in the field.

Replace local oscillator tube (V3).

In the event of replacement of the oscillator tube, or oscillator circuit component, complete alignment may not be necessary. Adjustment of A20, which is an overall adjustment may compensate for the change. If it doesn't, complete oscillator realignment is recommended.

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	Across antenna terminals.	213MC (10MC Sweep)	211.25MC 215.75MC	13	Vert. Amp. to Point (A) Low side to chassis.	A8	Adjust so that markers are properly positioned as per Fig 4. If any channel markers can not be positioned properly it may be necessary to adjust A20. If A20 is adjusted all channels will be affected, and each channel will require readjustment.
			207MC (10MC Sweep)	205.25MC 209.75MC	12		A9	
			201MC (10MC Sweep)	199.25MC 203.75MC	11		A10	
			195MC (10MC Sweep)	193.25MC 197.75MC	10		A11	
			189MC (10MC Sweep)	187.25MC 191.75MC	9		A12	
			183MC (10MC Sweep)	181.25MC 185.75MC	8		A13	
			177MC (10MC Sweep)	175.25MC 179.75MC	7		A14	
			85MC (10MC Sweep)	83.25MC 87.75MC	6		A15	
			79MC (10MC Sweep)	77.25MC 81.75MC	5		A16	
			69MC (10MC Sweep)	67.25MC 71.75MC	4		A17	
			63MC (10MC Sweep)	61.25MC 65.75MC	3		A18	
			57MC (10MC Sweep)	55.25MC 59.75MC	2		A19	

FIG. 1

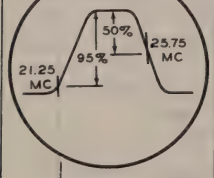


FIG. 2

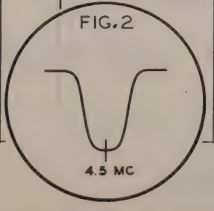
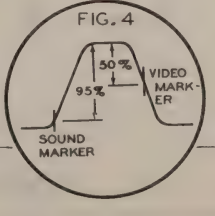
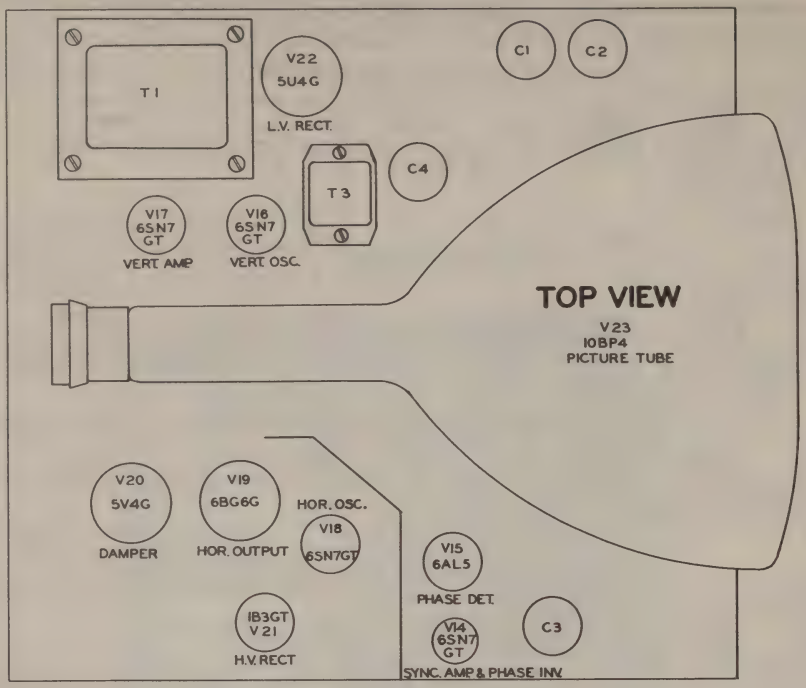
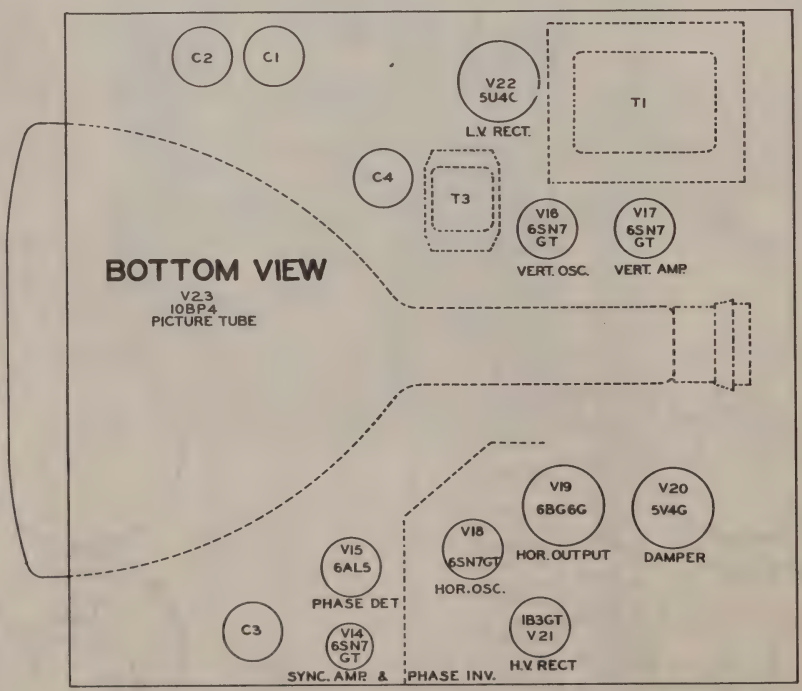


FIG. 3

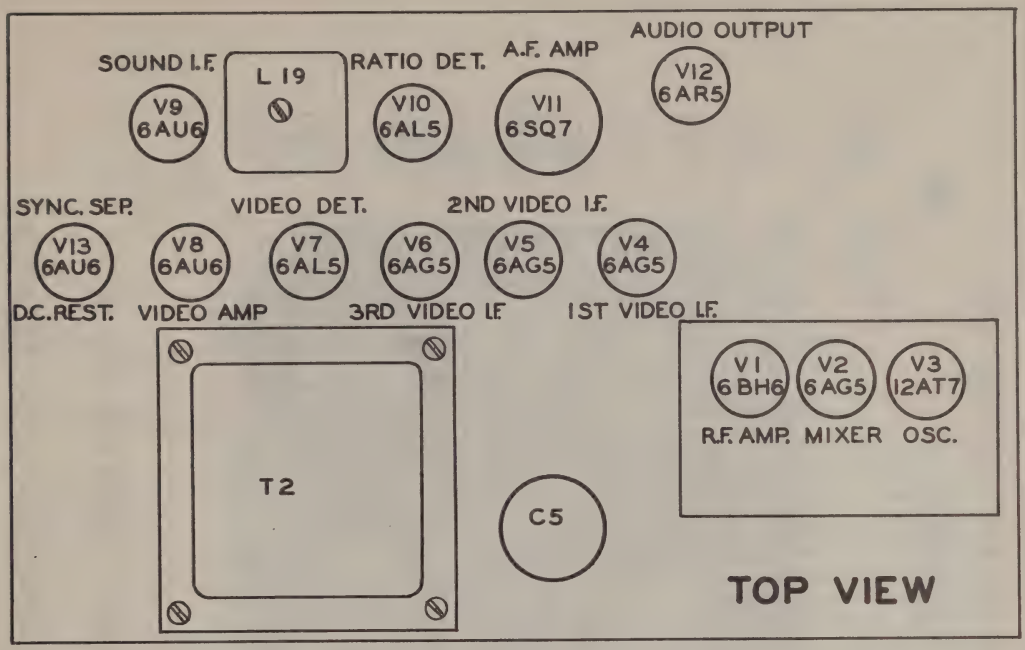
FIG. 4

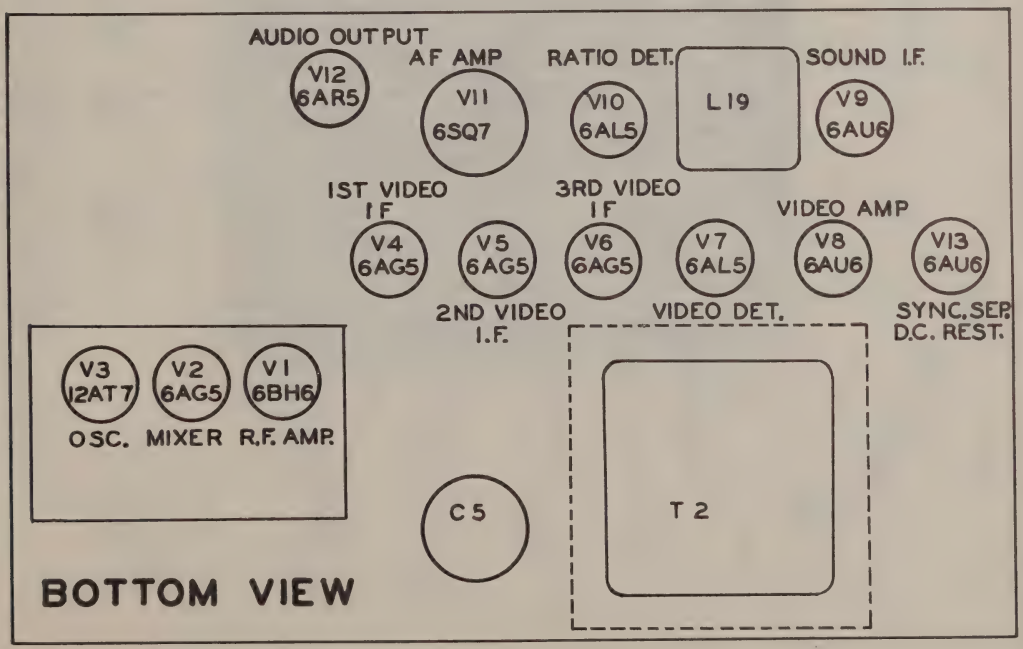




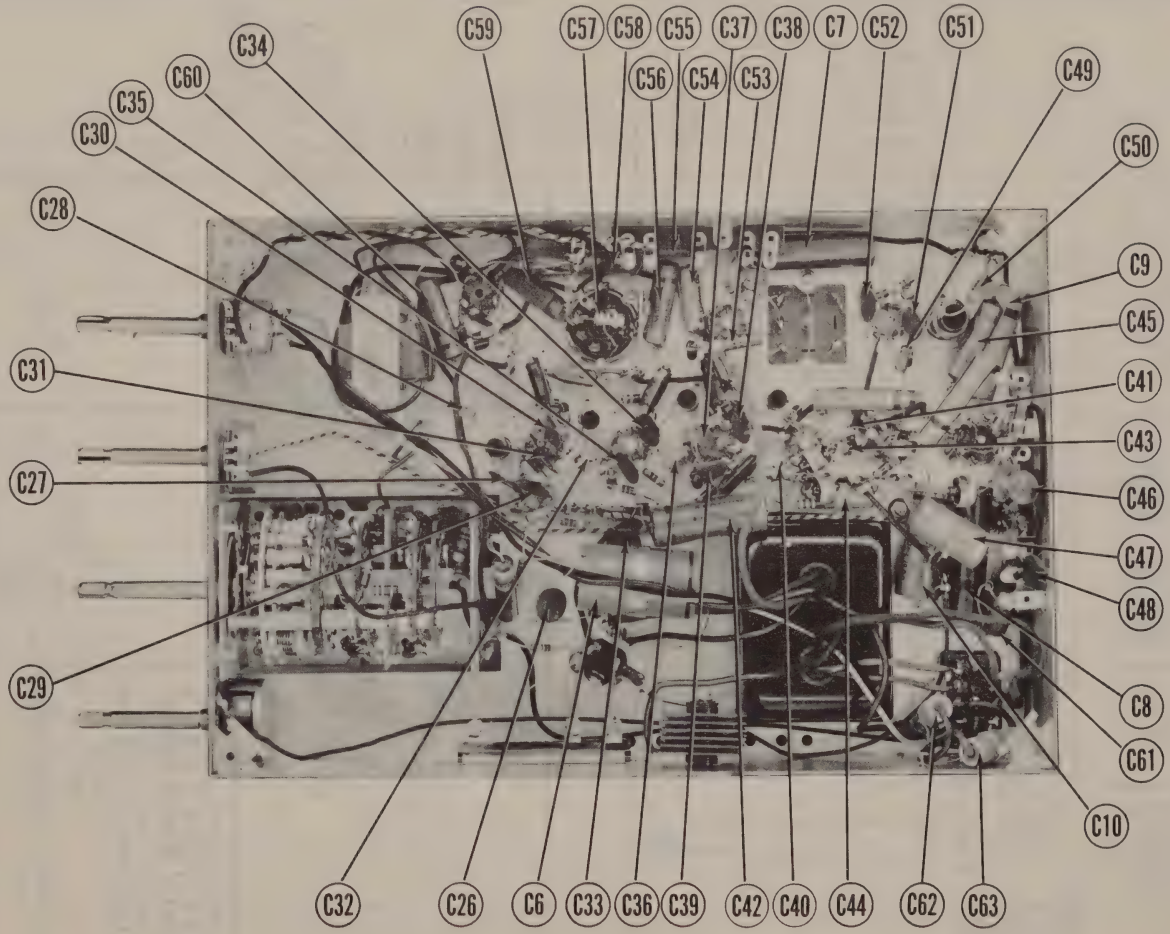


TUBE PLACEMENT-SWEEP CHASSIS

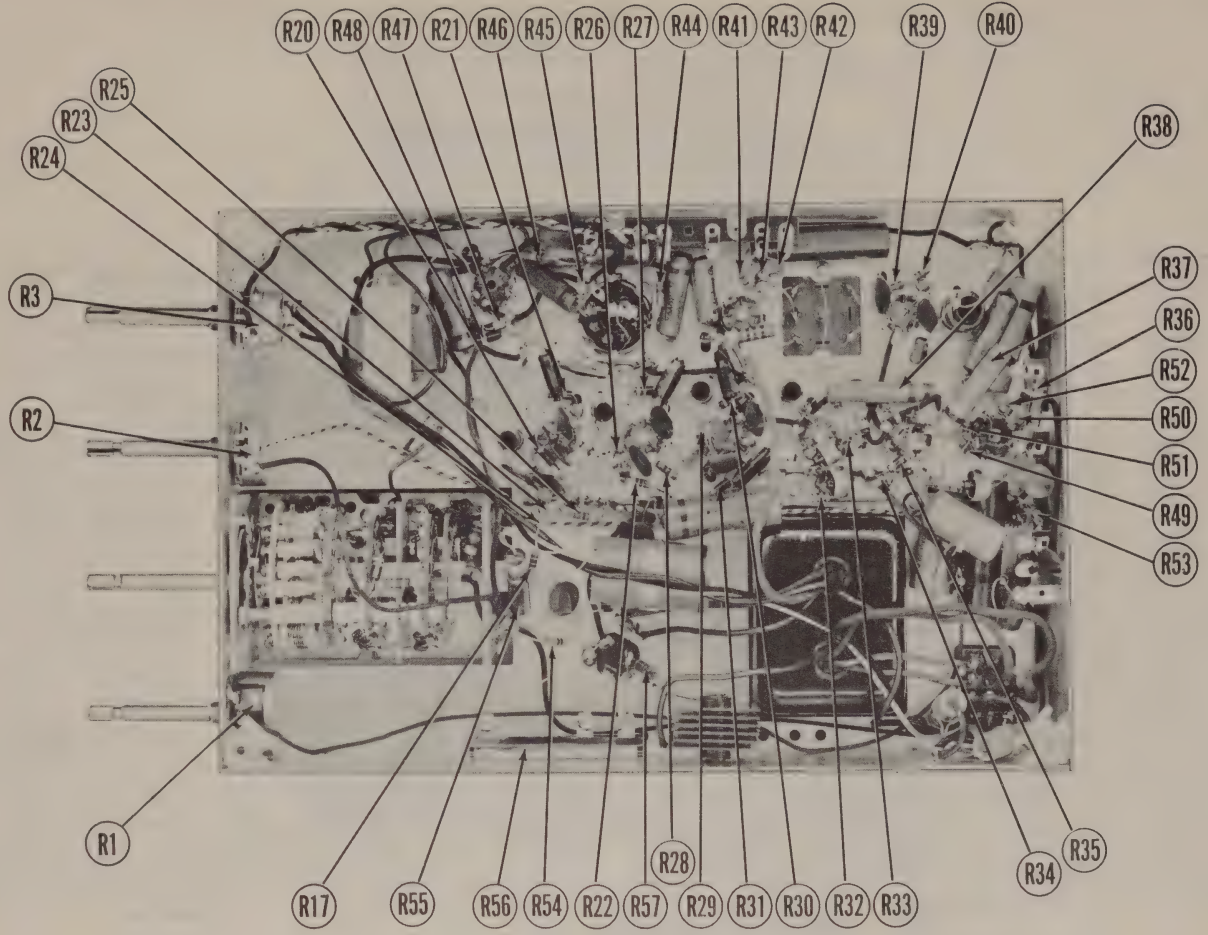




TUBE PLACEMENT- RF-IF CHASSIS



RF-IF CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION



RF-IF CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATON

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BH6	-.2VDC	.6VDC	0V	6.3VAC	210VDC	150VDC	0V		
V 2	6AG5	-1.2VDC	0V	0V	6.3VAC	260VDC	145VDC	0V		
V 3	12AT7	0V	0V	0V	0V	0V	210VDC	§-.8VDC	0V	6.3VAC
V 4	6AG5	-1.8VDC	.4VDC	6.3VAC	0V	125VDC	125VDC	.4VDC		
V 5	6AG5	-.5VDC	.3VDC	6.3VAC	0V	125VDC	125VDC	.3VDC		
V 6	6AG5	0V	1.2VDC	6.3VAC	0V	120VDC	120VDC	1.2VDC		
V 7	6AL5	0V	0V	6.3VAC	0V	0V	0V	-1VDC		
V 8	6AU6	.6VDC	0V	6.3VAC	0V	210VDC	160VDC	14VDC		
V 9	6AU6	0V	0V	6.3VAC	0V	125VDC	125VDC	1VDC		
V 10	6AL5	-.2VDC	-.1VDC	6.3VAC	0V	0V	0V	-.3VDC		
V 11	6BQ7	0V	-.6VDC	0V	0V	0V	95VDC	6.3VAC	0V	
V 12	6AR5	0V	15VDC	6.3VAC	0V	230VDC	250VDC	130VDC		
V 13	6AU6	0V	4VDC	6.3VAC	0V	87VDC	130VDC	4VDC		
V 14	6SN7GT	0V	250VDC	10VDC	0V	80VDC	0V	6.3VAC	0V	
V 15	6SN7GT	0V	400VDC	15VDC 20VDC	0V	400VDC	15VDC 20VDC	6.3VAC	0V	
V 16	6AL5	1.3VDC	-6VDC	6.3VAC	0V	-.1VDC	0V	-.1VDC		
V 17	6SN7GT	-110VDC -130VDC	290VDC	0V	-110VDC -130VDC	4VDC	0V	6.3VAC	0V	
V 18	6SN7GT	.5VDC	420VDC	18.5VDC	-4.4VDC -6.1VDC	130VDC	18.5VDC	6.3VAC	0V	
V 19	6BG6G	0V	0V	5.3VDC	0V	-4VDC	250VDC	6.3VAC	250VDC	TOP CAP *
V 20	5V4G	0V	520VDC	520VDC	400VDC	520VDC	400VDC	500VDC	520VDC	
V 21	1B3GT	* DO NOT MEASURE								
V 22	5U4G	0V	440VDC	0V	400VAC	0V	400VAC	0V	440VDC	
V 23	10BP4	0V	4VDC	PIN 10 265VDC	PIN 11 65VDC	PIN 12 6.3VAC				

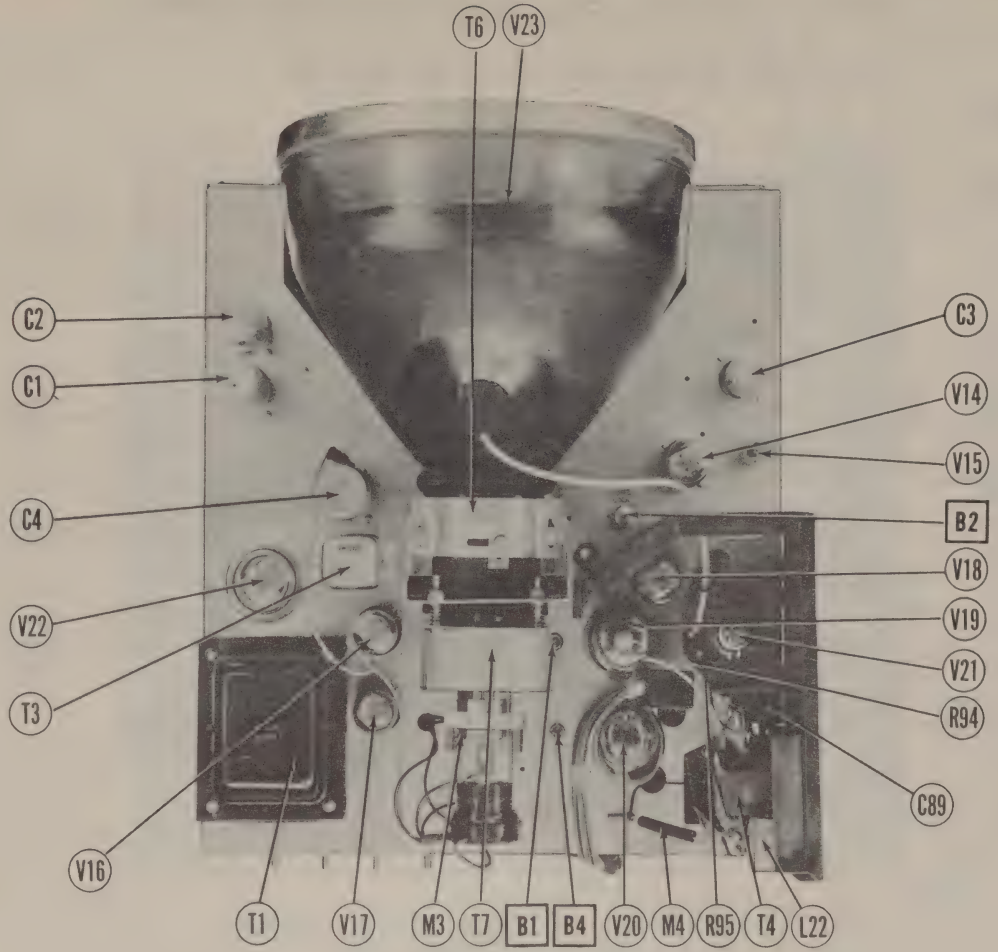
* Do Not Measure.

RESISTANCE READINGS

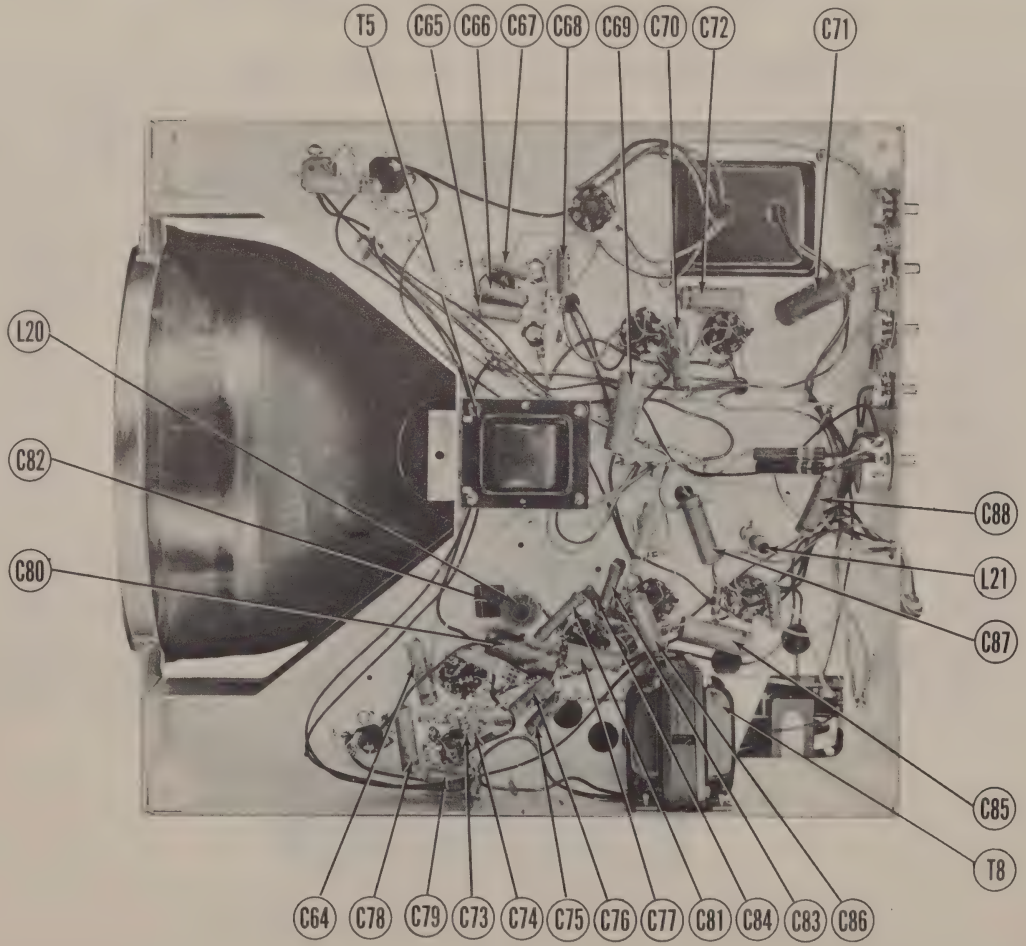
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BH6	500KΩ	100Ω	0Ω	.1Ω	†12KΩ	†60KΩ	0Ω		
V 2	6AG5	1 Meg.	0Ω	0Ω	.1Ω	†3KΩ	†85KΩ	0Ω		
V 3	12AT7	0Ω	0Ω	0Ω	0Ω	0Ω	†7K	10KΩ	0Ω	.1Ω
V 4	6AG5	310KΩ	100Ω	.1Ω	0Ω	♦1.5KΩ	♦1.5KΩ	100Ω		
V 5	6AG5	310KΩ	47Ω	.1Ω	0Ω	♦1.5KΩ	♦1.5KΩ	47Ω		
V 6	6AG5	2.7KΩ	100Ω	.1Ω	0Ω	♦1.5KΩ	♦1.5KΩ	100Ω		
V 7	6AL5	0Ω	Inf.	.1Ω	0Ω	Inf.	0Ω	8.2KΩ		
V 8	6AU6	1 Meg.	0Ω	.1Ω	0Ω	†8KΩ	†[illegible]KΩ	100Ω		
V 9	6AU6	1Ω	0Ω	.1Ω	0Ω	[illegible]1.5KΩ	1.5KΩ	180Ω		
V 10	6AL5	Inf.	Inf.	.1Ω	0Ω	0Ω	0Ω	13KΩ		
V 11	6SQ7	0Ω	10 Meg.	0Ω	Inf.	Inf.	†440KΩ	.1Ω	0Ω	
V 12	6AR5	470KΩ	390Ω	.1Ω	0Ω	†2.5KΩ	†2KΩ	♦550Ω		
V 13	6AU6	1 Meg.	22KΩ	.1Ω	0Ω	♦220KΩ	♦500Ω	22KΩ		
V 14	6SN7GT	1 Meg.	†10KΩ	5KΩ	2.2KΩ	†22KΩ	0Ω	.1Ω	0Ω	
V 15	6SN7GT	4.7 Meg.	†1000Ω	5KΩ 1000Ω	4.7 Meg.	†1000Ω	5KΩ 1000Ω	.1Ω	0Ω	
V 16	6AL5	750KΩ	750KΩ	.1Ω	0Ω	30KΩ	0Ω	30KΩ		
V 17	6SN7GT	1.7 Meg. 750KΩ	†100KΩ	0Ω	1.7 Meg. 750KΩ	♦5 Meg.	0Ω	.1Ω	0Ω	
V 18	6SN7GT	220KΩ	♦10KΩ	1.5KΩ	150KΩ 100KΩ	♦330KΩ	1.5KΩ	.1Ω	0Ω	
V 19	6BG6G	Inf.	0Ω	100Ω	15Ω	470KΩ	8KΩ	.1Ω	†8KΩ	TOP CAP ♦200Ω
V 20	5V4G	Inf.	170KΩ	170KΩ	240Ω	170KΩ	240Ω	170KΩ	170KΩ	
V 21	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ♦460Ω
V 22	5U4G	Inf.	20KΩ	Inf.	50Ω	Inf.	45Ω	Inf.	20KΩ	
V 23	10BP4	0Ω	22KΩ	PIN 10 †1.5KΩ	PIN 11 160KΩ	PIN 12 .1Ω				

† Measured From Pin 8 Of V22.
♦ Measured From Output Of M1.
♦ Measured From Pin 8 Of V20.

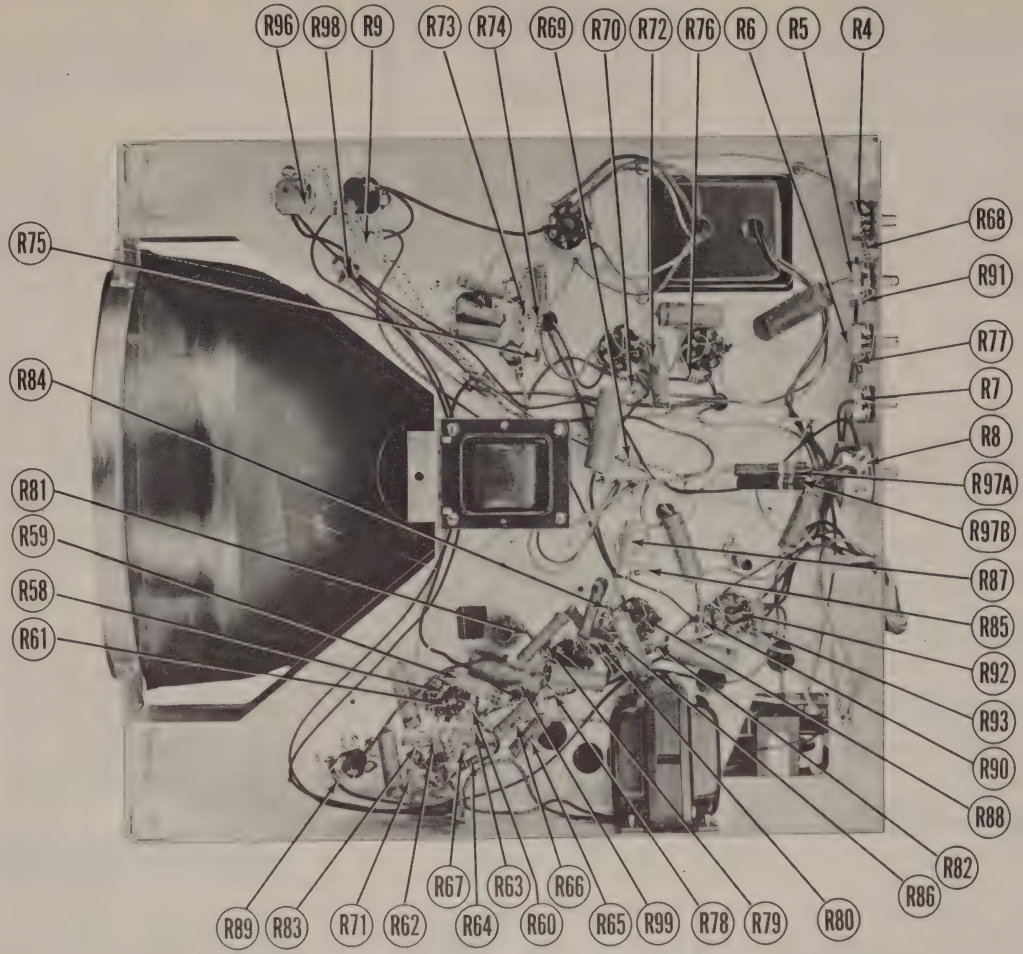
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



SWEEP CHASSIS-TOP VIEW



SWEEP CHASSIS-CAPACITOR IDENTIFICATION



SWEEP CHASSIS-RESISTOR IDENTIFICATION

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6BH6	6BH6	7GM	
V2	Mixer	6AS8	6AS8	7PD	
V3	Oscillator	12AT7	12AT7	9A	
V4	1st Video IF Amp.	6AG5	6AG5	7BD	
V5	2nd Video IF Amp.	6AG5	6AG5	7BD	
V6	3rd Video IF Amp.	6AG5	6AG5	7BD	
V7	Video Det.-AGC	6AL5	6AL5	6BT	
V8	Video Amp.	6AU6	6AU6	7BK	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Det.	6AL5	6AL5	6BT	
V11	AF Amp.	6SQ7	6SQ7	8Q	
V12	Audio Output	6AR5	6AR5	6CC	
V13	Sync. Sep.	6AU6	6AU6	7BK	
V14	Sync. Amp.-Phase Splitter	6SN7GT	6SN7GT	8BD	
V15	Phase Det.	6AL5	6AL5	6BT	
V16	Vert. Osc.	6SN7GT	6SN7GT	8BD	
V17	Vert. Amp.	6SN7GT	6SN7GT	8ND	
V18	Hor. Osc.	6SN7GT	6SN7GT	8BD	
V19	Hor. Output	6BQ6G	6BQ6G	5BT	
V20	Damper	5V4G	5V4G	5L	
V21	HV Rectifier	1B3GT	1B3GT	3C	
V22	LV Rectifier	5U4G	5U4G	5T	
V23	Picture Tube	10BP4	10BP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	450	25E36	AFH128J	UP11CJ		D12114	◓ Filter
B	40	450			835			▲ Filter
C2A	40	450	25E37	AF88J	UP4445		TVL-64	◓ Filter
B	40	450						▲ Filter
C3A	10	450	25E38	AF32J	UP1145		EL-151	■ Decoupling
B	15	450						▲ Decoupling
C4	1000	25	25E39	AF200A	UP1M -25		D12115	Vert. Output Cath. Byp.
C5A	50	150	25E30	AF888D	UP5515		D12112	■ Filter
B	50	150			BR3015			▲ Filter
C	50	150						Filter
C6	40	300	25E31	PRS450/40	BR4035		TVA-24	Decoupling
C7	10	25	25E8	PRS25/10	BBR10-25		TVA-5	Stabilizing Cap
C8	10	25	25E8	PRS25/10	BBR10-25		TVA-5	Sync. Sep. Cath. Byp.
C9	10	250	25E35	PRS250/12	BR1225		UT-201	V Amp. Screen Bypass
C10	100	10	25E12	PRS12/100	BRH151		UHC-112	V Amp. Cath. Bypass
C11	680					GP2K-750		RF Coupling
C12	680					GP2K-750		RF Cath. Bypass
C13	680					GP2K-750		AGC Filter
C14	680					GP2K-750		RF Screen Bypass
C15	50					GP1K50		RF Coupling
C16	.68							RF Coupling
C17	.47							RF Coupling
C18	1.5					NP0K-1.5		RF Coupling
C19	25					GP1K-25		RF Coupling
C20	5000							Mixer Screen Bypass
C21	1.5					NP0K-1.5		Osc. Coupling
C22	680					GP2K-750		Osc. Plate Bypass
C23	3					NP0K-3		Osc. Feedback
C24	20					GP1K-25		Osc. Grid Cap †
C25	680					GP2K-750		Osc. Fil. Bypass
C26	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	Filament Bypass
C27	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	Mixer Plate Dec.
C28	100		23E11	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C29	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	AGC Filter
C30	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	1st V IF Fil. Bypass
C31	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	1st V IF Decoupling
C32	100		23E11	1468-0001	5W5T1	GP1K-100	1FM-25	IF Coupling
C33	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	AGC Filter
C34	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	2nd V IF Fil. Bypass
C35	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	2nd V IF Decoupling
C36	100		23E11	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C37	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	3rd V IF Cath. Bypass
C38	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	3rd V IF Fil. Bypass
C39	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	3rd V IF Decoupling
C40	100		23E11	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C41	5		23E28	1468-000005	5W5V5	NP0K-5	MS-55	V Diode Filter
C42	.25	200	23E222	P488-25	GT2P25		TC-2	AGC Filter
C43	5		23E28	1468-000005	5W5V5	NP0K-5	MS-55	RF Bypass
C44	.1	200	23E2014-9	P288-1	GT2P1		TM-1	Video Coupling
C45	.02	400	23E413	P488-02	GT4S2		TM-12	V Amp. Screen Bypass
C46	.1	400	23E2014-23	P488-1	GT4P1		TM-1	Video Coupling
C47	.2	400	23E2014-22	P488-22	GT4P2		TC-2	Video Coupling
C48	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	Pic Tube Cath. Dec.
C49	2		23E21					S IF Coupling
C50	3		23E13			N750K-3		Fixed Trimmer
C51	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	S IF Cath. Bypass
C52	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	S IF Decoupling
C53	1000		23E2012	1468-001	1W5D1	GP2L-001	1FM-21	Diode Load Cap
C54	.002	400	23E405	P688-002	GT6D2	GP2M-002	TM-22	De-emphasis
C55	.005	400	23E408	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C56	.005	400	23E408	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C57	100		23E11	1468-0001	5W5T1	GP1K-100	1FM-31	AF Plate Bypass
C58	.25	200	23E222	P488-25	GT2P25		TC-2	AF Plate Decoupling
C59	.01	400	23E411	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C60	.005	400	23E408	P688-005	GT6D5	GP2M-005	TM-25	Output Plate Bypass

CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.
C61	.05	200	23E216	P288-05	GT2S5
C62	.01	220AC	23E250	P288-01	GT2S1
C63	.01	220AC	23E250	P688-01	GT6S1
C64	.05	400	23E416	P488-05	GT4S5
C65	.002	400	23E405	P688-002	GT6D2
C66	.002	400	23E405	P688-002	GT6D2
C67	.002	400	23E405	P688-002	GT6D2
C68	.005	400	23E408	P688-005	GT6D5
C69	.2	400	23E420	P488-20	GT4P2
C70	.05	400	23E416	P488-05	GT4S5
C71	.1	600	23E618	P688-1	GT6P1
C72	.1	400	23E418	P488-1	GT4P1
C73	1000		23E2012	1468-001	1W5D1
C74	1000		23E2012	1468-001	1W5D1
C75	.002	400	23E405	P688-002	GT6D2
C76	.002	400	23E405	P688-002	GT6D2
C77	.05	400	23E416	P488-05	GT4S5
C78	.05	400	23E416	P488-05	GT4S5
C79	.003	400	23E406	P688-003	GT6D3
C80	.25	200	23E222	P488-25	GT2P25
C81	250		23E2030-3	1468-00025	SW5T25
C82	4000	500	23E86	1464-004	[illegible]
C83	250		23E2030-3	1468-00025	SW5T25
C84	400		23E2030-4	1468-0004	SW5T4
C85	.25	200	23E222	P488-25	GT2P25
C86	.05	400	23E416	P488-05	GT4S5
C87	.1	400	23E418	P488-1	GT4P1
C88	.05	400	23E416	P488-05	GT4S5
C89	500	1000	23E2029		
C90	125		23E2030-7		
C91	680				

† Some Models Use 25MMF In This Applicatio
* Not Used In All Models.

CON

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLARO PART
R1	1000Ω	2	28E31		43-100
R2A	25KΩ	½	28E32	◁11-120	AM-40-
B	Shaft		Not Req.	Not Req.	KSS-3
R3A	500KΩ	½	28E33	◁13-133	AM-60-
B	Shaft		Not Req.	Not Req.	KSS-3
C	Switch		Not Req.	76-1	SW-A
R4	1 Meg.	½	28E36	◁11-137	M-61-5
R5	250KΩ	½	28E45	◁11-130	M-55-5
R6	5000Ω	½	28E44	◁11-114	M-19-5
R7	50KΩ	½	28E43	◁11-123	M-44-5
R8	1500Ω	4	28E42		10-150
R9	20Ω	2	28E49		

RESI

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: IRC PART No.
R10	22KΩ	½		
R11	100Ω	½		
R12	10KΩ	1		
R13	56KΩ	½		
R14	4700Ω	½		
R15	1 Meg.	½		
R16	82KΩ	½		
R17	1000Ω	½		
R18	6800Ω	1		
R19	10KΩ	1		
R20	3300Ω	½	27E332	
R21	100Ω	½	27E101	
R22	1000Ω	½	27E102	BTS-1000
R23	470KΩ	½	27E474	BTS-470K
R24	470KΩ	½	27E474	BTS-470K
R25	10KΩ	½	27E103	BTS-10K
R26	4700Ω	½	27E472	BTS-4700
R27	47Ω	½	27E470	
R28	1000Ω	½	27E102	BTS-1000
R29	2700Ω	½	27E272	BTS-2700
R30	100Ω	½	27E101	
R31	1000Ω	½	27E102	BTS-1000
R32	470KΩ	½	27E474	BTS-470K
R33	8200Ω	½	27E822	BTS-8200
R34	1 Meg.	½	27E105	BTS-1 Meg.
R35	68Ω	½	27E680	BW-½-68
R36	6800Ω	1	27E682-3	BTA-6800
R37	6800Ω	2	27E682-5	BT-2-6800
R38	15KΩ	2	27E153-5	BT-2-15K
R39	180Ω	½	27E181	
R40	1000Ω	½	27E102	BTS-1000
R41	6800Ω	½	27E682-2	BTS-6800
R42	6800Ω	½	27E682-2	BTS-6800
R43	39KΩ	½	27E393	BTS-39K
R44	10 Meg.	½	27E106	BTS-10 Meg.
R45	220KΩ	½	27E224	BTS-220K
R46	220KΩ	½	27E224	BTS-220K
R47	470KΩ	½	27E474	BTS-470K
R48	390Ω	2	27E391-5	BT-2-390
R49	1 Meg.	½	27E105	BTS-1 Meg.
R50	220KΩ	½	27E224	BTS-220K
R51	22KΩ	½	27E223	BTS-22K
R52	100KΩ	½	27E104	BTS-100K

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	[illegible]	[illegible]	
V2	1st Det. Osc.	[illegible]	[illegible]	
V3	2nd Det. Osc.	[illegible]	[illegible]	
V4	1st IF Amp.	[illegible]	[illegible]	
V5	2nd IF Amp.	[illegible]	[illegible]	
V6	3rd IF Amp.	[illegible]	[illegible]	
V7	Det. Amp.	[illegible]	[illegible]	
V8	1st Video Amp.	[illegible]	[illegible]	
V9	2nd Video Amp.	[illegible]	[illegible]	
V10	Video Output	[illegible]	[illegible]	
V11	Sync. Amp.	[illegible]	[illegible]	
V12	Sync. Inverter	[illegible]	[illegible]	
V13	Vert. Osc.	[illegible]	[illegible]	
V14	Vert. Output	[illegible]	[illegible]	
V15	Horiz. Osc.	[illegible]	[illegible]	
V16	Horiz. Output	[illegible]	[illegible]	
V17	Horiz. Output	[illegible]	[illegible]	
V18	Horiz. Output	[illegible]	[illegible]	
V19	Horiz. Output	[illegible]	[illegible]	
V20	Horiz. Output	[illegible]	[illegible]	
V21	HV Rectifier	[illegible]	[illegible]	
V22	LV Rectifier	[illegible]	[illegible]	
V23	Picture Tube	[illegible]	[illegible]	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FIRESTONE Part No.	AEROVOX Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	SPRAGUE Part No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	450	25E36	AFH128J	UP11CJ			▲ Filter
B	40	450		BS8	UP4445			▲ Filter
C2A	40	450	CH387	AF88J	UP4445		TVL-64	▲ Filter
B	40	450						▲ Filter
C3	.1	400	13E28	AF32J	UP1145		SL-151	▲ Decoupling
C4	100	25	26E89	AF200A	UP1M -25		D12116	Vert. Output Cath. Byp.
C5A	30	450	AV84A	AF988D	UP5815 BR3015		D12112	■ Decoupling Filter
B	30	450						Filter
C6	.05	400	29E2C	PRS450/40	BR4035		TVA-24	Decoupling
C7	.1	400	29E2C	PRS25/10	BBR10-25		TVA-5	Stabilizing Cap
C8	.1	400	29E2C	PRS25/10	BBR10-25		TVA-5	Sync. Sep. Cath. Byp.
C9	.05	400	29E2C	PRS250/10	BR1225		MT-201	V Amp. Screen Bypass
C10	.1	400	29E2C	PRS12/100	BRH161		UHC-112	V Amp. Cath. Bypass
C11	[illegible]					GP2K-750		RF Coupling
C12	[illegible]					GP2K-750		RF Cath. Bypass
C13	[illegible]					GP2K-750		AGC Filter
C14	[illegible]					GP2K-750		RF Screen Bypass
C15	[illegible]					GP1K50		RF Coupling
C16	[illegible]							RF Coupling
C17	.68							RF Coupling
C18	.47							RF Coupling
C19	[illegible]					NP0K-1.5		RF Coupling
C20	[illegible]					GP1K-25		RF Coupling
C21	[illegible]							Mixer Screen Bypass
C22	[illegible]					NP0K-1.5		Osc. Coupling
C23	[illegible]					GP2K-750		Osc. Cathode Bypass
C24	[illegible]					NP0K-3		Osc. Feedback
C25	[illegible]					GP1K-25		Osc. Grid Cap †
C26	[illegible]					GP2K-750		Osc. Fil. Bypass
C27	5000		33E2005	1467-005	1D5D5	GP2M-005	1FM-25	Filament Bypass
C28	5000		33E2005	1467-005	1D5D5	GP2M-005	1FM-25	Mixer Plate Dec.
C29	1.0		23E11	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C30	5000		33E2005	1467-005	1D5D5	GP2M-005	1FM-25	AGC Filter
C31	5000		33E2005	1467-005	1D5D5	GP2M-005	1FM-25	1st V IF Decoupling
C32	[illegible]		[illegible]	1467-005	1D5D5	GP2M-005	1FM-25	1st V IF Decoupling
C33	1.0		23E11	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C34	5000		33E2005	1467-005	1D5D5	GP2M-005	1FM-25	AGC Filter
C35	5000		33E2005	1467-005	1D5D5	GP2M-005	1FM-25	2nd V IF Fil. Bypass
C36	5000		33E2005	1467-005	1D5D5	GP2M-005	1FM-25	2nd V IF Decoupling
C37	1.0		23E11	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C38	5000		33E2005	1467-005	1D5D5	GP2M-005	1FM-25	3rd V IF Fil. Bypass
C39	5000		33E2005	1467-005	1D5D5	GP2M-005	1FM-25	3rd V IF Decoupling
C40	1.0		23E11	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C41	.1		23E28	1468-000005	5W5V5	NP0K-5	MP-55	V Diode Filter
C42	.25	200	24E22	1468-000005	5W5V5		MP-55	ADC Filter
C43	.5		25E26	1468-000005	5W5V5	NP0K-5	MP-55	RF Bypass
C44	.1	200	23E2014-9	P268-1	GT2P1		TM-1	Video Coupling
C45	.02	400	27E412	P468-22	GT4B2		TM-12	V Amp. Screen Bypass
C46	.1	400	23E2014-23	P468-1	GT4P1		TM-1	Video Coupling
C47	.1	400	23E2014-22	P468-22	GT4P2		TM-2	Video Coupling
C48	5000		33E2005	1467-005	1D5D5	GP2M-005	1FM-25	Pic Tube Cath. Dec.
C49	[illegible]		[illegible]					S IF Coupling
C50	[illegible]		[illegible]			N750K-3		Fixed Trimmer
C51	5000		33E2005	1467-005	1D5D5	GP2M-005	1FM-25	S IF Cath. Bypass
C52	5000		33E2005	1467-005	1D5D5	GP2M-005	1FM-25	S IF Decoupling
C53	1.0		23E11	1468-001	1W5D1	GP1K-001	1FM-21	Diode Load Cap
C54	.05	400	25E42	P688-002	GT6D2	GP2M-002	TM-22	De-emphasis
C55	.02	400	27E412	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C56	.005	400	23E428	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C57	1.0		23E11	1468-0001	5W5T1	GP1K-100	1FM-31	AF Plate Bypass
C58	.25	200	24E262	P488-25	GT5P25		TC-8	AF Plate Decoupling
C59	.01	400	29E411	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C60	.005	400	23E428	P688-005	GT6D5	GP2M-005	TM-25	Output Plate Bypass

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FIRESTONE Part No.	AEROVOX Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	SPRAGUE Part No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C61	.05	200	25E10	P268-3	GT2P5		TM-15	Sync. Coupling
C62	.05	200	25E10	P268-01	GT2P5		TM-11	Line Filter
C63	.01	1,000	28E250	P468-1	GT4P1		TM-11	Line Filter
C64	.05	400	25E116	P468-1	GT4P5		TM-15	Sync. Coupling
C65	.1	400	23E28	P468-1	GT4P1	GP2M-005	TM-25	Integrator Net
C66	.05	400	25E42	P688-1	GT6D5	GP2M-005	TM-25	Integrator Net
C67	.05	400	25E42	P688-1	GT6D5	GP2M-002	TM-22	Integrator Net
C68	.1	400	23E28	P468-1	GT4P1	GP2M-005	TM-25	Integrator Net
C69	.1	400	23E28	P468-1	GT4P1		TM-25	Vert. Osc. Grid Cap
C70	.05	400	25E42	P688-1	GT6D5		TM-25	Vert. Osc. Plate Dec.
C71	.1	600	23E118	P668-1	GT6P1		TM-1	Vert. Discharge
C72	.1	400	23E28	P468-1	GT4P1		TM-1	Vert. Sweep Coupling
C73	.05	400	25E116	P468-1	GT4P1	GP2L-001	1FM-21	Hor. Sync. Coupling
C74	1.0	400	25E116	P468-1	GT4P1	GP2L-001	1FM-21	Hor. Sync. Coupling
C75	.05	1,400	25E42	P688-1	GT6D5	GP2M-002	TM-22	Hor. Output Cath. Byp.
C76	.082	4,000	25E14	P688-X2	GT6D5	GP2M-002	TM-22	AFC Filter
C77	.1	400	23E14	P468-1	GT4P1		TM-1	AFC Filter
C78	.05	400	25E42	P468-1	GT4P5		TM-15	AFC Feedback
C79	.1	400	23E28	P468-1	GT4P1	GP2M-003	TM-25	Voltage Divider
C80	.05	400	25E42	P688-1	GT6D5		TM-25	AFC Filter
CH1	2.0		22E3-030-5	1408-0-0025	1W5T25	GP2K-250	1FM-525	Hor. Osc. Feedback
C81	4000	500	22E3	1414-4	MC-4		MC-4	Fixed Trimmer
C82	4000	500	22E3-030-4	1408-A-0025	1W5T25	GP2K-250	1FM-525	Hor. Sweep Coupling
C83	40/3		22E3-030-2	1408-0-0004	5W5T4		1FM-54	Hor. Discharge
C84	40/3		22E3-02	1408-B-25	1W5T25		MC-2	Hor. Output Cath. Byp.
C85	.25	2.0	24E22	P488-25	GT5P25		TM-15	Hor. Output Screen Byp.
C86	.05	4.0	25E116	P488-05	GT4S5		TM-15	Damper Filter
C87	.1	400	23E418	P484-1	GT4P1		TM-1	Damper Filter
C88	.25	400	24E16	P484-25	GT4S5		TM-15	Damper Filter
C89	5.0	1000	23E2029			410-500		H V Filter
C90	1.0		23E2030-7					Hor. Def. Coil Shunt*
C91	680							RF Bypass

† Some Models Use 25MF In This Application.
* Not Used In All Models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE Part No.	IRC Part No.	CLAROSTAT Part No.	INSTALLATION NOTES
R1	1000Ω	2	29E31		43-1000	Contrast Control (Wire Wound)
R2A	250KΩ	½	29E32	q11-180	M-40-5	Brightness Control
B	Shaft		Not Req.	Not Req.	Kas-2	Attach to R2A For Instructions
R3A	500KΩ	½	29E33	q11-133	AM-50-2	Volume Control
B	Shaft		Not Req.	Not Req.	Kas-3	Attach to R3A Per Instructions
C	Switch		Not Req.	70-1	SW-A	Attach to R3A Per Instructions
R4	1 Meg.	½	29E36	q11-137	M-1-5	Vertical Hold Control
R5	2500Ω	½	29E46	q11-129	M-25-5	Height Control
R6	5000Ω	½	29E44	q11-116	M-5-5	Vertical Linearity Control
R7	50Ω	½	29E45	q11-123	M-.05-5	Horizontal Hold Control
R8	1500Ω	4	29E42		10-1500	Focus Control (Wire Wound)
R9	20Ω	2	29E40			Horizontal Centering Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE Part No.	IRC Part No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R10	22Ω	½			RF Grid 20%
R11	100Ω	½			RF Cathode 20%
R12	10KΩ	½			RF Plate 20%
R13	56KΩ	½			RF Screen 20%
R14	470Ω	½			Mixer Coil Shunt 20%
R15	1 Meg.	½			Mixer Grid 20%
R16	680Ω	½			Mixer Screen 20%
R17	100Ω	½			Mixer Plate Decoup.
R18	680Ω	½			Osc. Plate 20%
R19	10KΩ	½			Osc. Grid 20%
R20	330Ω	½	27E332		1st Video IF Grid
R21	100Ω	½	27E101		1st Video IF Cathode
R22	100Ω	½	27E102	BTS-1000	1st Video IF Decoup.
R23	470Ω	½	27E474	BTS-470K	AGC Network 20%
R24	470KΩ	½	27E474	BTS-470K	AGC Network 20%
R25	10KΩ	½	27E103	BTS-10K	AGC Network
R26	470Ω	½	27E472	BTS-4700	2nd Video IF Grid
R27	47Ω	½	27E470	BTS-470	2nd Video IF Cathode
R28	1000Ω	½	27E102	BTS-1000	2nd Video IF Decoup.
R29	2700Ω	½	27E272	BTS-2700	3rd Video IF Grid
R30	100Ω	½	27E101		3rd Video IF Cathode
R31	1000Ω	½	27E102	BTS-1000	3rd Video IF Decoup.
R32	470KΩ	½	27E474	BTS-470K	AGC Network 20%
R33	6800Ω	½	27E682	BTS-6800	Video Det. Diode Load
R34	1 Meg.	½	27E105	BTS-1 Meg.	Video Amp. Grid 20%
R35	68Ω	½	27E680	BW-½-68	Video Amp. Cathode
R36	4700Ω	½	27E682-5	BTS-6800	Video Amp. Plate
R37	6800Ω	2	27E682-5	BT-2-6800	Video Amp. Screen
R38	15KΩ	2	27E153-5	BT-2-15K	Bleeder
R39	180Ω	½	27E181		Sound IF Cathode
R40	1000Ω	½	27E102	BTS-1000	Sound IF Decoup.
R41	6800Ω	½	27E682-2	BTS-6800	Ratio Det. Diode Load
R42	6800Ω	½	27E682-2	BTS-6800	Ratio Det. Diode Load
R43	39KΩ	½	27E393	BTS-39K	De-emphasis
R44	10 Meg.	½	27E106	BTS-10 Meg.	AF Grid 20%
R45	220KΩ	½	27E224	BTS-220K	AF Plate 20%
R46	220KΩ	½	27E224	BTS-220K	AF Plate 20%
R47	470KΩ	½	27E474	BTS-470K	Output Grid
R48	39Ω	2	27E391-5	BT-2-390	Output Cathode
R49	1 Meg.	½	27E105	BTS-1 Meg.	Sync. Sep. Grid 20%
R50	220KΩ	½	27E224	BTS-220K	Sync. Sep. Plate 20%
R51	22KΩ	½	27E223	BTS-22K	Sync. Sep. Cathode
R52	100KΩ	½	27E104	BTS-100K	Phase Correction 20%

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE Part No.	IRC Part No.	IDENTIFICATION CODES
R53	150K	½	27E154	BTS-150K	Voltage Divider 20%
R54	22KΩ	2	27E223	BTS-22K	Voltage Divider
R55	470Ω	2	27E471-5	BW-2-470	Filter Wire Wound
R56A	40Ω	5	27E1006	AB-400	Filter Wire Wound
B	1.2Ω	5		AB-125	Filter Wire Wound
R57	50Ω	1	27E330-3		Surge Limiter
R58	22KΩ	½	27E222	BTS-2200	Sync. Amp. Grid
R59	22KΩ	½	27E223-5	BT-2-22K	Sync. Amp. Plate
R60	1 Meg.	½	27E105-5	BTS-1 Meg.	Sync. Phase Inverter Grid 20%
R61	47.5K	½	27E472-2	BTS-4700	Sync. Phase Inverter Cathode
R62	47.5K	½	27E472-2	BTS-4700	Sync. Phase Inverter Plate
R63	47.5K	½	27E472-2	BTS-4700	Sync. Phase Inverter Plate
R64	33K	½	27E333-2	BTS-33K	Horiz. AFC Diode Load
R65	47KΩ	½	27E474-2	BTS-470K	Horiz. AFC Diode Load
R66	470KΩ	½	27E474-2	BTS-470K	Horiz. AFC Diode Load
R67	33KΩ	½	27E333-2	BTS-33K	Horiz. AFC Diode Load
R68	680KΩ	½	27E684-2	BTS-680K	Vert. Osc. Grid
R69	100KΩ	½	27E104-2	BTS-100K	Vert. Osc. Plate Decoup.
R70	4700Ω	½	27E682-2	BTS-6800	Vert. Peaking
R71	47KΩ	½	27E273-2	BTS-27K	Phase Det. Cathode
R72	4.7 Meg.	½	27E475-2	BTS-4.7 Meg	Vert. Discharge Plate
R73	680Ω	½	27E682-2	BTS-6800	Integrator
R74	680Ω	½	27E822-2	BTS-8200	Integrator
R75	22KΩ	½	27E223-2	BTS-22K	Integrator
R76	4.7 Meg.	½	27E475-2	BTS-4.7 Meg	Vert. Amp. Grid 20%
R77	1.0MΩ	½	27E102-2	BTS-1000	Vert. Amp. Cathode
R78	220KΩ	½	27E224-2	BTS-220K	Horiz. Osc. Grid 20%
R79	1KΩ	½	27E102-2	BTS-1000	Horiz. Osc. Cathode
R80	10KΩ	½	27E104-2	BTS-100K	Horiz. Osc. Grid 20%
R81	1.6KΩ	½	27E1009-8	BTS-5600-5%	Horiz. Osc. Plate 5%
R82	330KΩ	½	27E1009-9	BTS-330-5%	Horiz. Osc. Plate 5%
R83	470KΩ	½	27E472-2	BTS-4700	Feed Back
R84	47Ω	½	27E470-2		Parasitic Supp.
R85	470KΩ	½	27E474-2	BTS-470K	Horiz. Output Grid 20%
R86	100Ω	1	27E101-3	BW-1-100	Horiz. Output Cathode Wire Wound
R87	5800Ω	2	27E582-5	BT-2-6800	Horiz. Output Screen
R88	100Ω		27E101-2		Parasitic Supp.
R89	2200Ω	½	27E222-2	BTS-2200	Filter
R90	1800Ω	1	27E182-3	BTA-1800	Filter
R91	100KΩ	½	27E104-2	BTS-100K	Voltage Divider
R92	47KΩ	½	27E472-2	BTS-4700	Horiz. Linearity Coil Shunt
R93	.68Ω	4	27E1013		Damper Filament (Wire Wound)
R94	3.3Ω	4	27E1015-4	BW-4-3.3	HV Filament (Wire Wound)
R95	1 Meg.	½	27E105		HV Filter
R96	100Ω	2	27E102-5	BW-2-1000	Filter
R97A	270Ω	2		BW-2-270	Focus Coil Shunt Wire Wound
B	270Ω	2		BW-2-270	Focus Coil Shunt Wire Wound
R98	12KΩ	11	27E1012	BTS-12K	Filter Wire Wound
R99	33KΩ	½	27E333-2	BTS-33K	AFC Filter Network

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: FIRESTONE Part No.	STANCOR Part No.	CHICAGO Part No.	MERIT Part No.
T1	117VAC @ 1.35A	1VAC @ .010 ADC	@ 3A		22E30	P-6165††	TP-9101††	P-8265††
T2	117VAC @ .77A	117VAC @ .03A ADC	6.3VAC @ 2A	6.3VAC @ 4A CT 2.5VAC @ 4.5A	22E27			

†† Add series resistor to reduce plate voltage.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: FIRESTONE Part No.	STANCOR Part No.	CHICAGO Part No.	MERIT Part No.	NOTES
T3	170Ω	82Ω	22E31	A-8121	TS0-1	A-3000	Vert.Block Osc.Trans.
T4	4302 Tap @ 186Ω	SEC. 1 22Ω Tap SEC. 2 .48Ω SEC. 3 9Ω	22E34	A-8117	TVB-1		Hor. Output Trans.
T5	1.6Ω	0.8Ω	22E33	A-8115	TS0-1	A-3035	Vert.Output Trans.
T6A	14Ω	2.8Ω		DY-1			Hor. Deflection Yoke
B	68Ω						Vert. Deflection Yoke
T7	24Ω		20E424				Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: FIRESTONE Part No.	STANCOR Part No.	CHICAGO Part No.	MERIT Part No.	INSTALLATION NOTES
T8	7200Ω	3.7Ω	600Ω	.5Ω	22E35	A-3850	RO-13	A-2900	

FIRESTONE MODEL 13-G-5 (Code 291-9-651)

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	FIRESTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.7Ω	1E34	ST-117 MOD.P8-T	8A31	
	CONE DIA.	V. C. DIA.				
SP2	7 1/4"	3/4"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	FIRESTONE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
L1	.210A	160Ω	8.5Henries	22E32	C-1721 ‡‡		C-2991‡‡	‡‡ Drill new mounting holes.

COILS (RF-IF)

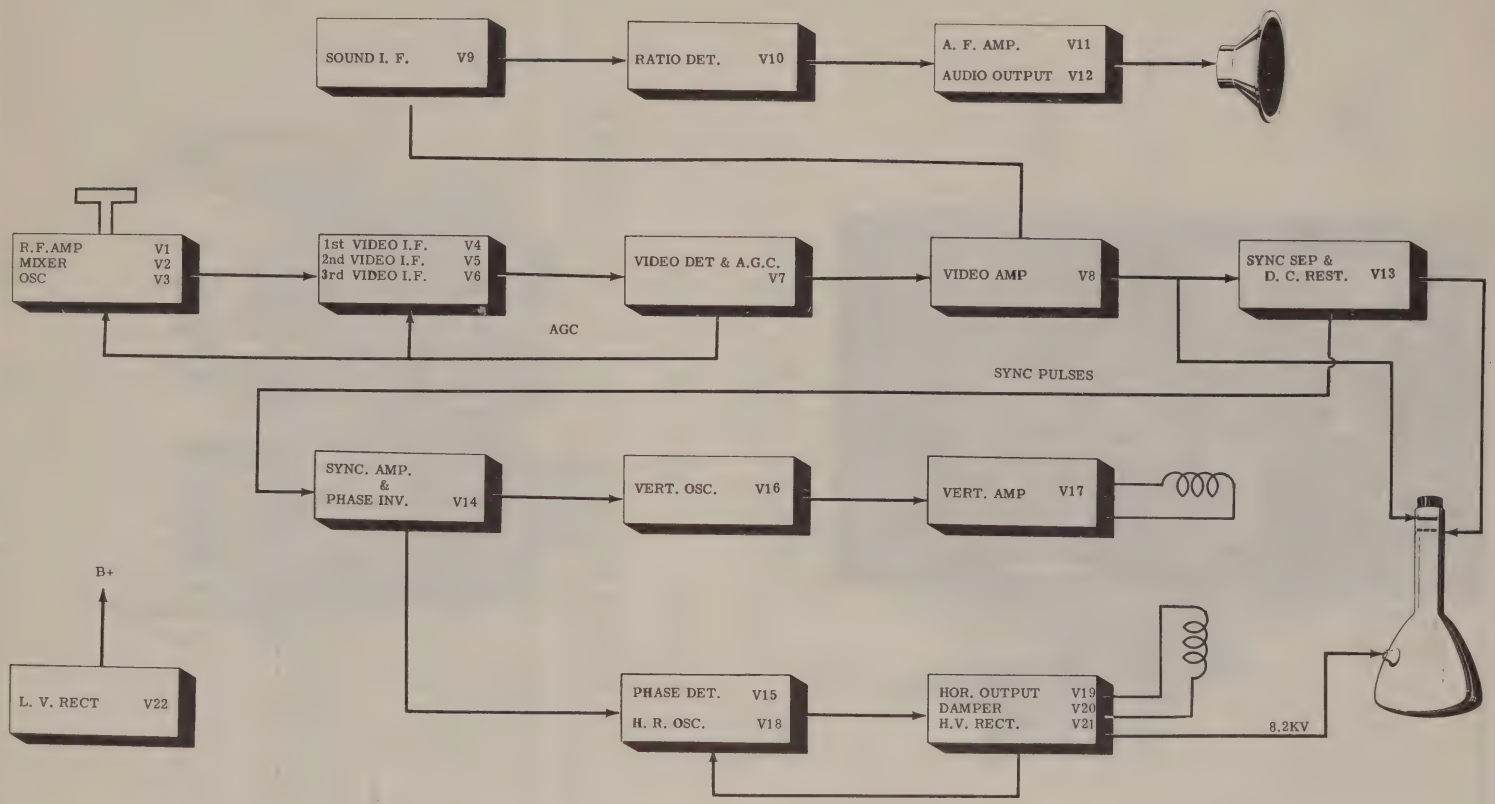
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	FIRESTONE PART No.	MEISSNER PART No.	
L2	Ant. Loading	0Ω				For channels 7-13, part of M2.
L3	Ant. Loading	0Ω				For channels 2-6, Part of M2 wound on 1000Ω resistor.
L4	RF Choke	0Ω				
L5	1st Video IF	.1Ω		20E360		
L6	2nd Video IF	.1Ω		20E360		
L7	3rd Video IF	.1Ω		20E360		
L8	Peaking	2.5Ω		2E79		Wound on 15KΩ resistor.
L9	4th Video IF	.1Ω		20E360		
L10	Fil. Choke	.1Ω		2E78		
L11	Fil. Choke	.1Ω		2E78		
L12	Fil. Choke	.1Ω		2E78		
L13	Fil. Choke	.1Ω		2E78		
L14	Peaking	9Ω		20E363-2		Wound on 33KΩ resistor.
L15	Peaking	14.5Ω		20E363-4		Wound on 8.2KΩ resistor
L16	Peaking	13.5Ω		20E363-3		Wound on 15KΩ resistor
L17	Peaking	13Ω		20E363-5		Wound on 10Meg. resistor
L18	Sound IF	4Ω		20E361		
L19	Ratio Det. Trans.	3.5Ω	.5Ω	20E382		
L20	Hor. Osc.	60Ω		20E409		
L21	Hor. Linearity	20Ω		20E410		
L22	Width Control	.4Ω		20E415		

SELENIUM RECTIFIER

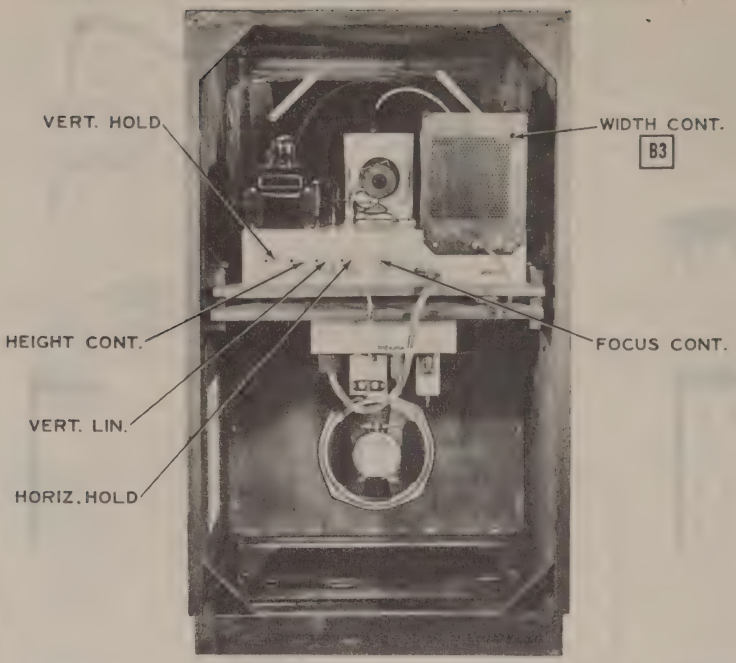
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	FIRESTONE PART No.			
M1	.035A	57E3			

MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M2	Tuner	20E384	Complete
M3	Ion Trap	18E122	
M4	Fuse	40E6	Type AGC .25A
	Safety Glass	9E16	



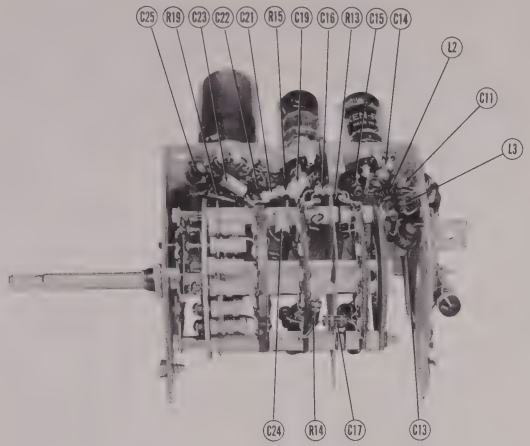
BLOCK DIAGRAM



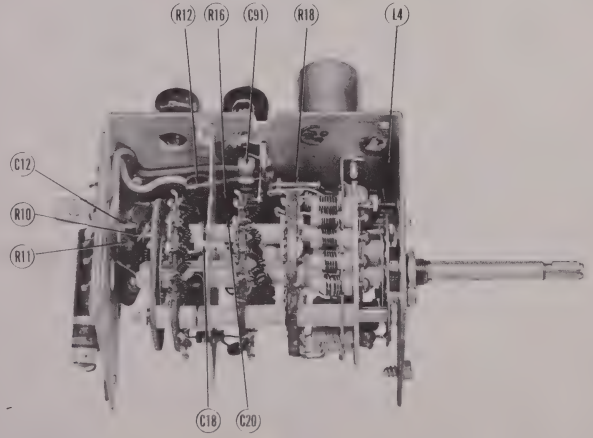
CABINET-REAR VIEW

HORIZONTAL SWEEP ADJUSTMENTS

1. Turn the horizontal drive adjustment (B1) clockwise as far as possible without crowding the right hand side of the test pattern. Insufficient horizontal drive will cause the raster to fall short of filling the mask horizontally. If it is not possible to "hold" the test pattern horizontally by adjustment of the horizontal hold control, set the horizontal hold control at the mid point of its rotation and adjust the horizontal oscillator adjustment slug (B2) until picture "syncs" horizontally.
2. Adjust the horizontal centering control and the width adjustment (B3) until the test pattern fills the mask properly in the horizontal plane.
3. Set the horizontal linearity adjustment (B4) so the test pattern is symmertrical from left to right. Slight readjustment of the horizontal drive (B1) may be necessary when making this adjustment.



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

LINCOLN MODEL 8ML985Z

TRADE NAME	Ford, Models 8MF983 (8A-18805B-1), 8MF983-E (8A-18805), Lincoln, Models 8ML985 (8L-18805-A), 8ML985E (8L-18805-B), 8ML985Z (8H-18805-A), 8ML985ZE (8H-18805). Mercury, Models 8MM991 (8M-18805-B), 8MM991-E (8M-18805)
SUPPLIER	Ford Motor Car Co., Detroit, Michigan Lincoln, Div. of Ford Motor Car. Co., Detroit, Michigan Mercury, Div. of Ford Motor Car. Co., Detroit, Michigan
TYPE SET	Battery Operated Custom-Built Automotive Superheterodyne Receiver
TUBES(EIGHT)	Types 6SK7GT RF Amp., 6SA7GT Converter, 6SK7GT IF Amp., 6SQ7GT DET-AVC-AF, 6J5GT Phase Inverter, (2) 6V6GT Power Output, 6X5GT Rectifier
POWER SUPPLY	6 Volt Storage Battery
TUNING RANGE-BROADCAST	540-1600KC
RATING	7 Amp. at 6 Volts DC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
If calibration is off after completing adjustments it can be corrected with adjustment screw at pivot end of pointer arm.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8 (Grid) of 6SA7GT (V2). Low side to chassis.	265KC (400 ~ Mod.)	Tuning slugs fully out.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	See Fig. 1	High side thru dummy to antenna socket. Low side to chassis.	535KC	535KC	"	A5	"
3.	"	"	1200KC	Tune for max. output	"	A6, A7, A8	"

The following procedure should be followed only when a core or coil has been replaced.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
4.	See Fig. 1	High side thru dummy to antenna socket. Low side to chassis.	1675KC (400 ~ Mod.)	1600KC	Across voice coil	A5, A6, A7, A8	Screw the cores completely out of the antenna, RF Converter and oscillator coils. Adjust A5, A6, A7 and A8 for maximum output. Replace cores in approximately their original position. (Cores project 11/16 inches from coil forms.)
5.	"	"	1300KC	1300KC	"	A9	Adjust for maximum output.
6.	"	"	1300KC	Tune for max. output.	"	A10, A11 A12	"
7.	"	"	600KC	"	"	A13	Rock tuning control and tune for maximum output. Check receiver at 1200KC, if off calibration or weak repeat steps 5, 6, and 7.

After all adjustments have been made, install receiver in car. Allow set to warm up for at least fifteen minutes. With antenna fully extended, tune in a weak station near 1200KC and adjust A8 for maximum output.

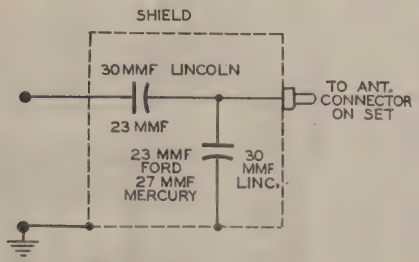


FIG. 1

PUSH-BUTTON ADJUSTMENT

1. Collapse the antenna.
2. Allow the set to warm up for at least fifteen minutes.
3. Loosen the first push-button on the left by turning it counterclockwise one turn.
4. With low volume, carefully tune in the desired station for clearest reception.
5. Press the pushbutton in firmly, then release and tighten as much as possible with your fingers. Repeat steps 4 and 5 for each push-button.

FORD MODELS 8MF983, -E;
LINCOLN MODELS 8ML985, E, Z, ZE;
MERCURY MODELS 8MM991, -E

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6SK7GT	6SK7GT	8N	
V2	Converter	6SA7GT	6SA7GT	8AD	
V3	IF Amp.	6SK7GT	6SK7GT	8N	
V4	DET.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
V5	Phase Inverter	6J5GT	6J5GT	6Q	
V6	Power Output	6V6GT	6V6GT	7AC	
V7	Power Output	6V6GT	6V6GT	7AC	
V8	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	400	22-1484	E3C66	UP2245C		EL-322	■ Filter
B	20	400						▲ Filter
C	20	25						Output Cathode Bypass
C2	.0047	600	22-1752	P688-0047	PTE6D5	GP2M-005	TM-25	AVC Filter
C3	.1	200	22-1777	P288-1	PTE4P1		TM-1	RF Cathode Bypass
C4	100	500	22-162	1468-0001	5W5T1	GP1K-100	1FM-31	RF Coupling
C5	250	500	22-1136	1469-00025	5R5T25	GP2K-250	1FM-325	Fixed Trimmer
C6	100	500	22-162	1468-0001	5W5T1	GP1K-100	1FM-31	Osc. Grid Cap.
C7	260		22-1712					Fixed Trimmer
C8	.1	400	22-1748	P488-1	PTE4P1		TM-1	Decoupling
C9	.02	200	22-1751	P488-02	PTE4S2		TM-12	AVC Filter
C10	.05	200	22-1778	P288-05	PTE4S5		TM-15	IF Cathode Bypass
C11	150	500	22-1137	1468-00015	5W5T15	GP2K-150	1FM-315	Tone Compensation
C12	560	500	22-1949	1468-0005	1W5T6	GP2K-560	1FM-35	Tone Compensation
C13	.005	200	22-2046	P688-005	PTE6D5	GP2M-005	TM-25	Tone Compensation
C14	.01	600	22-1784	P688-01	PTE6S1	GP2-335-01	TM-11	Tone Compensation
C15	.0015	600	22-1785	P688-0015	PTE6D1	GP2L-0015	TM-21	Tone Compensation
C16	.005	600	22-1752	P688-005	PTE6D5	GP2M-005	TM-25	Audio Coupling
C17	220	500	22-182	1468-00025	5W5T25	GP2K-220	1FM-325	AF Amp. Plate Bypass
C18	.022	600	22-1750	P688-022	PTE6S2		TM-12	Audio Coupling
C19	.022	600	22-1750	P688-022	PTE6S2		TM-12	Audio Coupling
C20	.008	1600	22-1771	P1688-0075	PTE16D8		MB-28	Buffer
C21	.5	100	22-1728				68P20	Hash Filter
C22	.5	120	22-1238	P288-5	GT2P5		68P25	Hash Filter

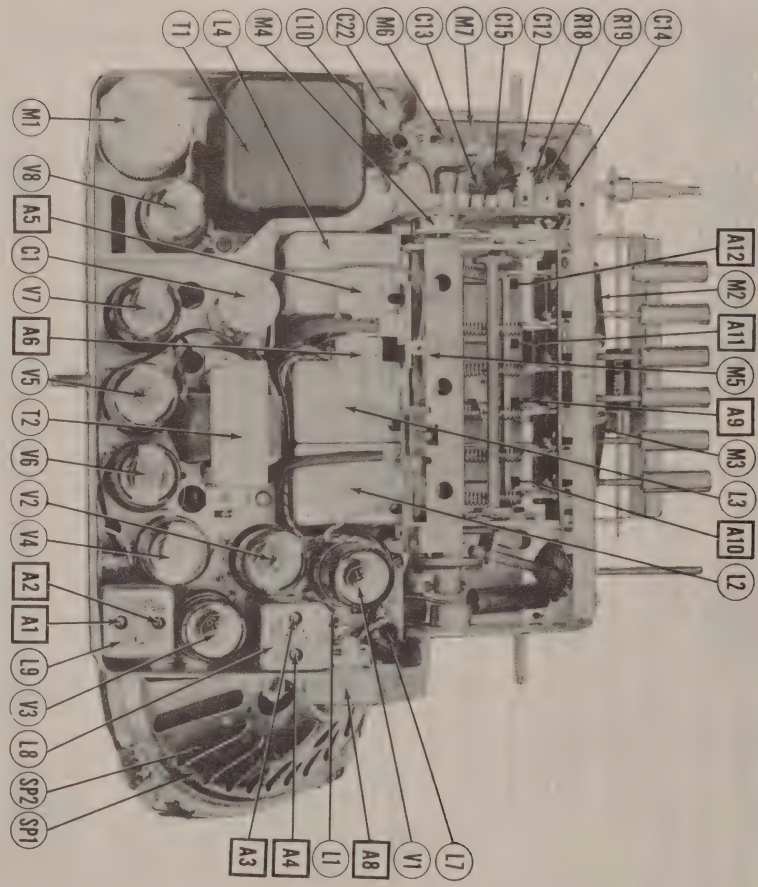
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	1/2	63-1654			Volume control, tapped at 200KΩ and 300KΩ
B	Switch					Tone switch
R2	800Ω	1	63-1267			Sensitivity control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
R3	330KΩ	1/2	63-1891	BTS-330K	AVC Network
R4	10KΩ	1/2	63-1827	BTS-10K	RF Plate
R5	330KΩ	1/2	63-1891	BTS-33K	Conv. Grid
R6	22KΩ	1/2	63-1841	BTS-22K	Osc. Grid
R7	820Ω	1/2	63-1782	BTS-820	Conv. Cathode
R8	1 Meg.	1/2	63-1912	BTS-1 Meg.	AVC Network
R9	1000Ω	1/2	63-1785	BTS-1000	IF Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
	RESISTANCE	WATTS			
R10	15KΩ	2	63-1624	BT-2-15K	Screen Dropping
R11	220KΩ	½	63-1884	BTS-220K	Diode Load
R12	220KΩ	½	63-1884	BTS-220K	AVC Network
R13	47Ω	½	63-1739	BW-½-47	AF Cathode
R14	15 Meg.	½	63-1961	BTS-15 Meg.	AF Grid
R15	330KΩ	½	63-1890	BTS-330K	AF Plate
R16	1500Ω	½	63-1793	BTS-1500	Feedback
R17	130KΩ	½	63-1873	BTS-130K	Tone Compensation
R18	68KΩ	½	63-1862	BTS-68K	Tone Compensation
R19	100KΩ	½	63-1869	BTS-100K	Tone Compensation
R20	47KΩ	½	63-1855	BTS-47K	Phase Inv. Grid
R21	2200Ω	½	63-1799	BTS-2200	Phase Inv. Cathode
R22	39KΩ	½	63-1852	BTS-39K	Phase Inv. Plate
R23	330KΩ	½	63-1890	BTS-330K	Output Grid
R24	330KΩ	½	63-1890	BTS-330K	Output Grid
R25	330Ω	3	63-1623	BW-3-330	Output Cathode, Wire Wound
R26	1800Ω	2	63-1620	BW-2-1800	Filter
R27	82Ω	½	63-1740	BW-½-82	Hash Suppression
R28	82Ω	½	63-1740	BW-½-82	Hash Suppression

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.
T1	6VDC at 7A	470VCT .052ADC			95-1143	P-8471	P-4071	VT-3

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	INSTALLATION NOTES
T2	9KΩ CT	3.8Ω	415Ω CT	.4Ω	95-1079	A-3823	A-3936	RO-110	

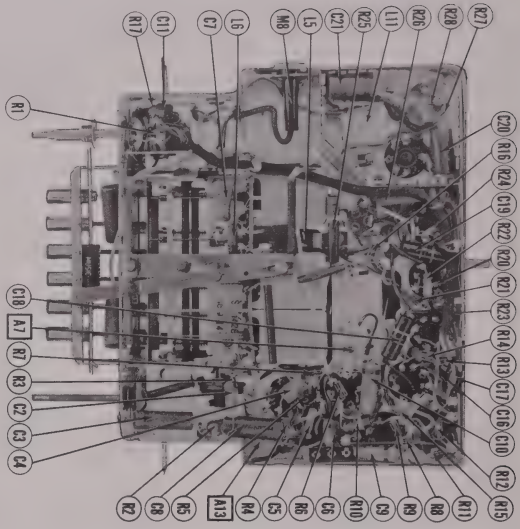
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-810		
SP1A	PM	3.8Ω	49-627	MOD. P69-V	69A3	Models 8MF983, 8ML985, 8MM991
B	PM		49-656	ST-810 MOD. P69-V	69A3	Model 8ML985Z
	CONE DIA.	V. C. DIA.				
SP2A	6" x 9"	3/4"				
B	6" x 9"					

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA MEISSNER PART No.	
L1	Ant. Loading	1Ω		8-8819		
L2	Ant. Coupling	12Ω		8-14227		Part of tuner unit Part #8-14295.
L3	Ant. Coupling	12Ω		8-14227		Part of tuner unit Part #8-14295.
L4	RF Coil	12Ω				Part of tuner unit Part #8-14295.
L5	Osc. Coil	2.8Ω		8-14228		Part of tuner unit Part #8-14295.
L6	RF Choke	.8Ω		8-14226		
L7	Osc. Padder	3Ω		8-14846		Tapped at 1Ω
L8	Input IF	40Ω	40Ω	95-1134	16-6652	
L9	Output IF	65Ω		95-1135		
L10	Hash Choke	0Ω		8-14761		
L11	Hash Choke	0Ω		20-213		

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

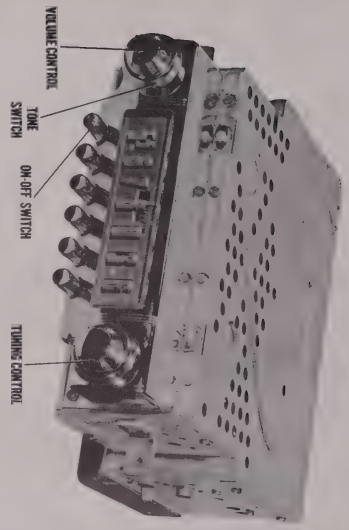
ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA CORNELL-DUBILIER PART No.	REPLACEMENT DATA RADIART PART No.	INSTALLATION NOTES
M1	Int.	6V	115 ~	190-22	C-00	5300	

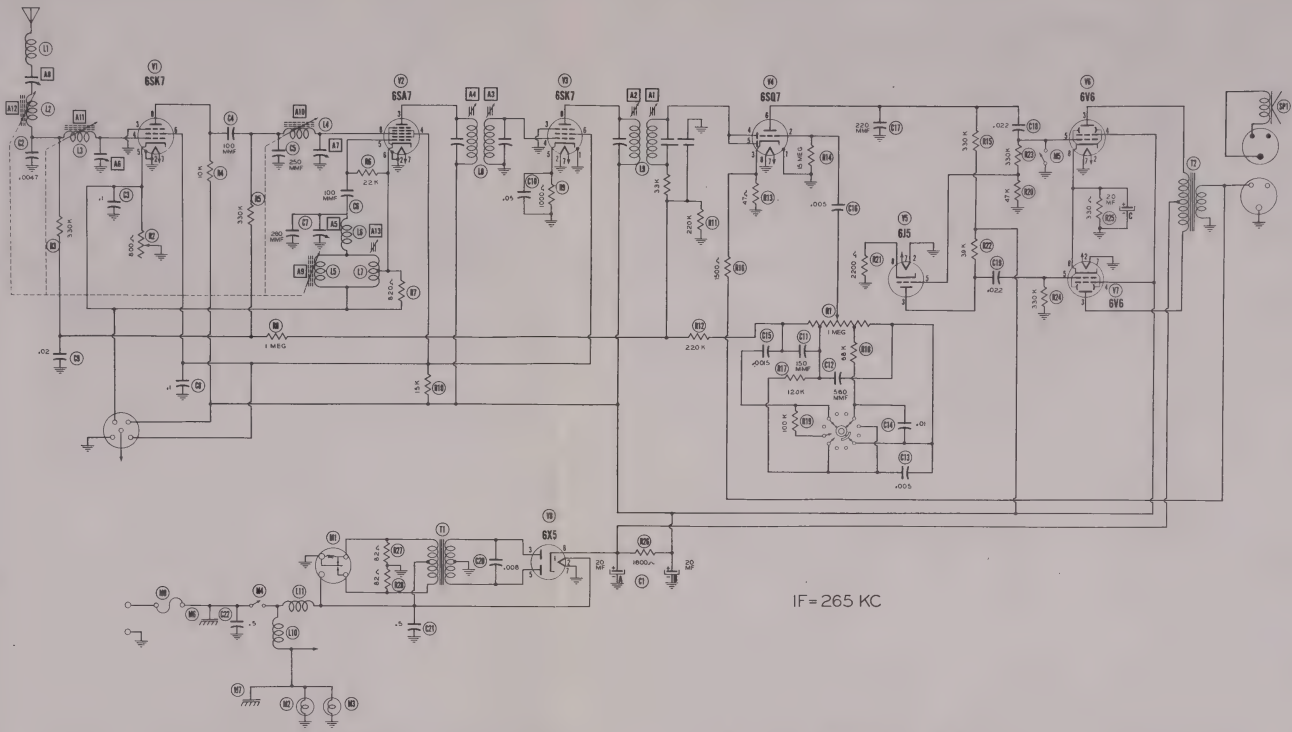
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ZENITH PART No.		NOTES
DL1	Bayonet	6-8	.25	Blue	100-36		Type #44
DL2	Bayonet	6-8	.25	Blue	100-36		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M4	Switch	85-435	On-Off
M5	Switch		Muting
M6	Spark Plate		
M7	Spark Plate		
M8	Fuse	136-11	SFE 14 Amp.
A5	Dual Trimmer	22-1722	Osc. Adj.
A6	Dual Trimmer	22-1722	RF Adj.
A7	Trimmer	22-1715	Conv. Adj.
A8	Trimmer	22-1960	Ant. Adj. (8ML985, 8ML985Z)
A9	Trimmer	22-1961	Ant. Adj. (8MF983, 8MM991)
	Push Button Assembly	S-15331	
	Dial Scale	26-392	8ML985, 8ML985Z
	Dial Scale	26-409	8MF983
	Dial Scale	26-412	8MM991
	Dial Glass	192-116	8MF983





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7GT	0V	0V	0V	0V	1.3VDC 1.3VDC	155VDC	69VDC	147VDC
V 2	6SA7GT	0V	0V	180VDC	70VDC	1.2VDC	2.2VDC	69VDC	0V
V 3	6SK7GT	0V	0V	0V	0V	4VDC	70VDC	69VDC	185VDC
V 4	6SQ7GT	0V	- .6VDC	0V	- .2VDC	- .2VDC	85VDC	69VDC	0V
V 5	6J5GT	0V	0V	115VDC	0V	0V	0V	69VDC	2.69VDC
V 6	6V6GT	0V	6VDC	225VDC	185VDC	0V	0V	0V	12VDC
V 7	6V6GT	0V	6VDC	225VDC	185VDC	0V	0V	0V	12VDC
V 8	6X5GT	0V	6VDC	342VAC	0V	342VAC	0V	0V	336VDC

TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7GT	0Ω	0Ω	0Ω	1.5Meg	1250 800	115KΩ	.1Ω	112KΩ
V 2	6SA7GT	0Ω	0Ω	91.8KΩ	115KΩ	22KΩ	150Ω	.1Ω	1.5Meg
V 3	6SK7GT	0Ω	0Ω	0Ω	40Ω	1000Ω	115KΩ	.1Ω	91.8KΩ
V 4	6SQ7GT	0Ω	1.5Meg	47Ω	250KΩ	250KΩ	1330KΩ	.1Ω	0Ω
V 5	6J5GT	0Ω	0Ω	140KΩ	Inf	47KΩ	Inf	.1Ω	2.2KΩ
V 6	6V6GT	0Ω	1Ω	123Ω	91.8KΩ	450KΩ	Inf	0Ω	330Ω
V 7	6V6GT	0Ω	1Ω	91.8KΩ	91.8KΩ	330KΩ	Inf	0Ω	330Ω
V 8	6X5GT	Inf	1Ω	330Ω	Inf	200Ω	Inf	0Ω	50KΩ

† Measured from pin 8 of V8.

THE COOPERATION OF THE MANUFACTURERS OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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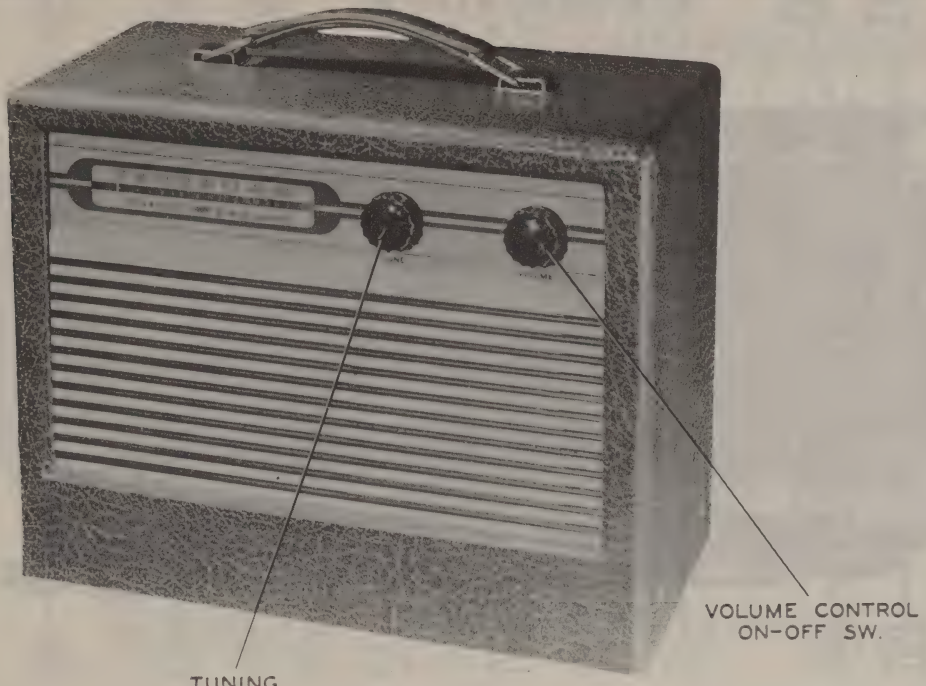
KNIGHT
MODEL 449



KNIGHT MODEL 449

TRADE NAME	Knight, Model 449
SUPPLIER	Allied Radio Corp., 833 W. Jackson Blvd., Chicago 7, Illinois
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 1T4 RF Amp., 1R5 Converter, 1T4 IF Amp., 1U5 DET-AVC-AF, 3V4 Power Output
POWER SUPPLY	110-120 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply in Pack Form
RATING	.15 Amp. at 117 Volts AC or 72MA at 9 Volts DC and 15MA at 90 Volts DC
TUNING RANGE—BROADCAST	535-1720KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn tuning gang fully closed and set the dial pointer 15/16 inches to the left of the extreme right hand end of the dial backplate.

Use isolation transformer if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to stator of front section of tuning gang. Low side to chassis.	455KC (400 ~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	.05MFD	"	1720KC	"	"	A5	Adjust for maximum output. Replace set in cabinet and check calibration at 1400KC, 1000KC and 600KC. If necessary bend end plates of stator on oscillator section of tuning gang. If plates are changed repeat entire procedure until no further improvement can be made.
3.		Loop	1400KC	Tune for max. output.	"	A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	1T4	1T4	6AR	
V2	Converter	1R5	1R5	7AT	
V3	IF Amp.	1T4	1T4	6AR	
V4	DET.-AVC-AF	1U5	1U5	6BW	
V5	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150		A F888D	UP44415		EL-340	■ Filter
B	50	150						▲ Filter
C	50	150						Filter
C2A	50	150		A F888D	UP44415		EL-340	■ Filament Bypass
B	50	150						▲ Filament Bypass
C	50	150						Filament Bypass
C3	.05	200		P288-05	PTE4S5		TM-15	AVC Filter
C4	.05	200		P288-05	PTE4S5		TM-15	AVC Filter
C5	100			1468-0001	5W5T1	GP1K-100	1FM-31	Osc. Grid Cap.
C6	.05	200		P288-05	PTE4S5		TM-15	Decoupling
C7	100			1468-0001	5W5T1	GP1K-100	1FM-31	Diode RF Filter
C8	.01	400		P488-01	PTE4S1	GP2-335-01	TM-11	Audio Coupling
C9	.05	200		P288-05	PTE4S5		TM-15	AF Amp. Screen Bypass
C10	.004	600		P688-004	PTE6D4	GP2M-0047	TM-24	Audio Coupling
C11	.0025	600		P688-0022	PTE6D2	GP2M-0025	TM-22	Output Plate Bypass
C12	.1	400		P488-1	PTE4P1		TM-1	Line Filter

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½		QI3-133	M-60-Z	Volume control
B	Switch			76-2	SW-A2	Attach to R1A per instructions

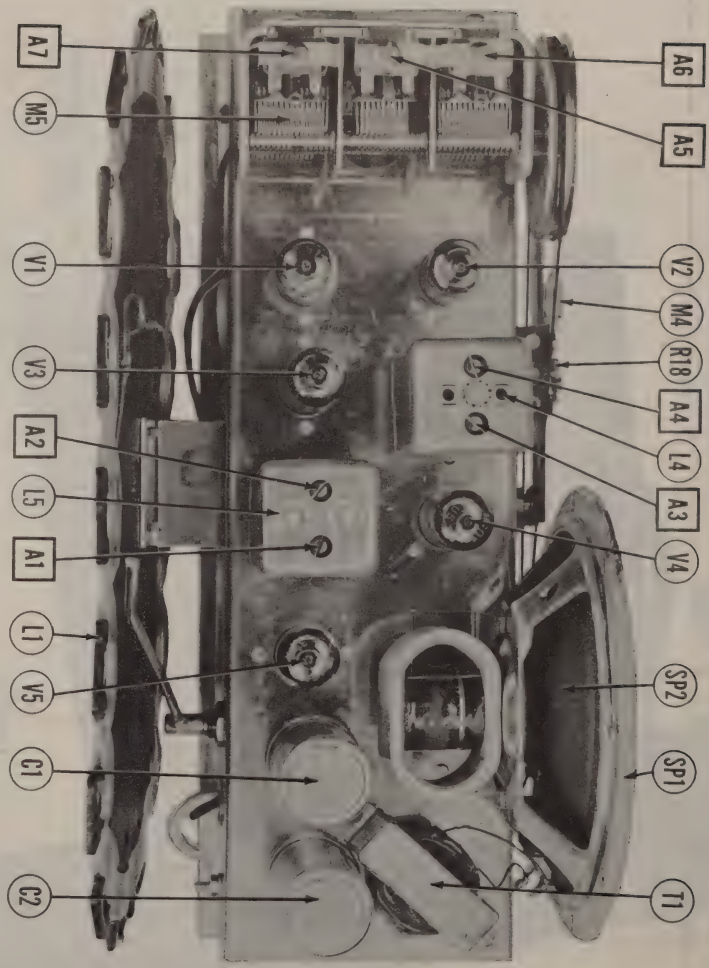
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R2	2.2 Meg.	½		BTS-2.2 Meg.	AVC Network
R3	100KΩ	½		BTS-100K	Osc. Grid
R4	5100Ω	½		BTS-4700	Decoupling
R5	2.2 Meg.	½		BTS-2.2 Meg.	AVC Network
R6	5.1 Meg.	½		BTS-4.7 Meg.	AF Grid
R7	5.1 Meg.	½		BTS-4.7 Meg.	AF Screen
R8	1 Meg.	½		BTS-1 Meg.	AF Plate
R9	51KΩ	½		BTS-47K	Tone Compensation
R10	1 Meg.	½		BTS-1 Meg.	Output Grid
R11	3000Ω	1		BTA-2700	Filter
R12	180Ω	½		BW-½-180	Filter, Wire Wound
R13	2000Ω	10		AB-2000	Filament Dropping, Wire Wound
R14	100Ω	5			Surge Limiter, Wire Wound
R15	24KΩ	½		BTS-22K	Filament String
R16	510Ω	½		BTS-470	Filament String
R17	1500Ω	1		BTA-1500	Filament String
R18	100KΩ	½		BTS-100K	Series Neon

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T1	7.5KΩ	3.4Ω	360Ω	.2Ω		A-3879	A-2932	RO-13	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: KNIGHT PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-105 *		* Fabricate new mounting brackets.
SP1	PM	3.4Ω		MOD. P5-X	5A07 †	† Use universal mounting brackets provided.
	CONE DIA.	V. C. DIA.				
SP2	4 3/4"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: MEISSNER PART No.
L1	Loop Ant.	1.8Ω			
L2	RF Coil	80Ω	5Ω		
L3	Osc. Coil	1.1Ω	5Ω		14-1060
L4	Input IF	17Ω	17Ω		
L5	Output IF	17Ω	17Ω		

SELENIUM RECTIFIER

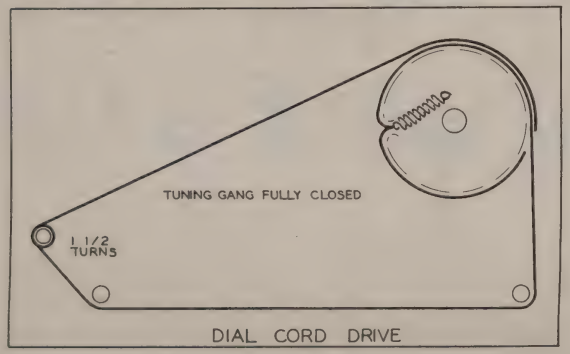
ITEM No.	RATING: CURRENT	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: SYLVANIA PART No.		NOTES
M1	.066A		NB-5		

BATTERIES

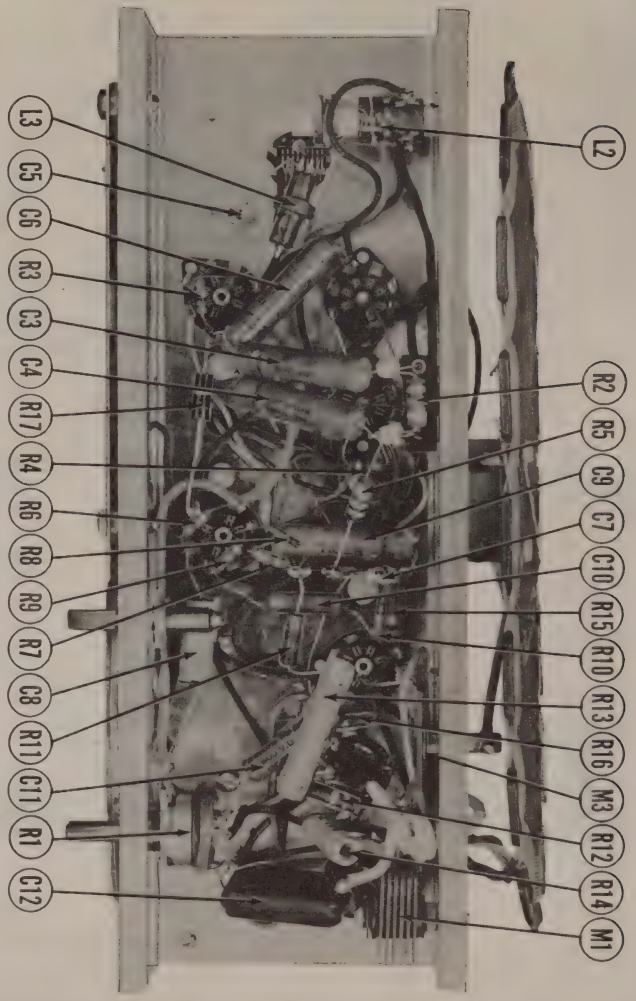
ITEM No.	VOLTAGE	KNIGHT PART No.	REPLACEMENT DATA: EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M2	9V "A" 90V "B"				753			F6A60	

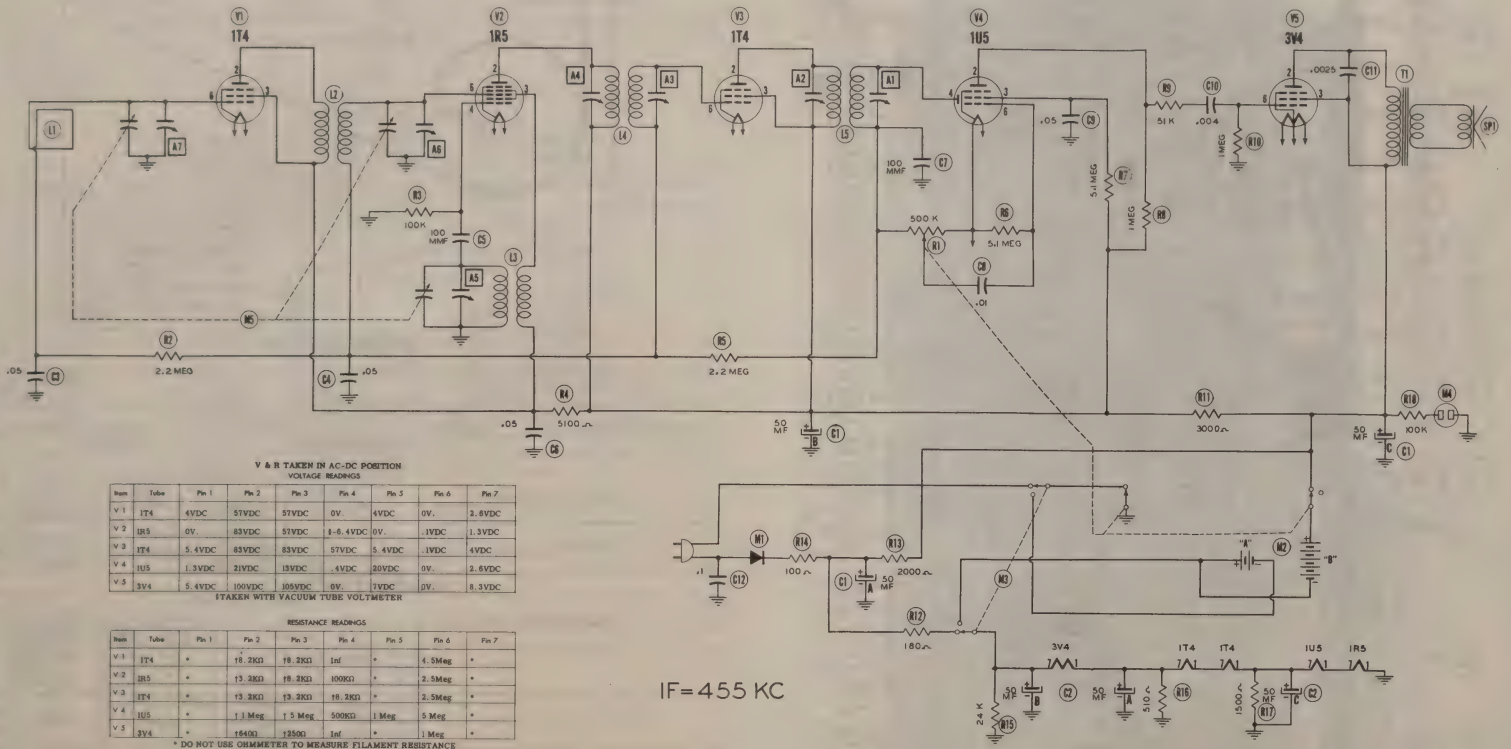
MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M3	Switch		AC/DC-Battery
M4	Lamp		Neon
M5	3 Gang Var. Cap.		(27-470MMF, 27-470MMF, 31-194MMF)



CHASSIS—BOTTOM VIEW





IF=455 KC

V & R TAKEN IN AC-DC POSITION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1T4	4VDC	57VDC	57VDC	0V.	4VDC	0V.	2.8VDC
V 2	1R5	0V.	83VDC	57VDC	8-6.4VDC	0V.	.1VDC	1.3VDC
V 3	1T4	5.4VDC	83VDC	83VDC	57VDC	5.4VDC	.1VDC	4VDC
V 4	1U5	1.3VDC	21VDC	13VDC	.4VDC	20VDC	0V.	2.6VDC
V 5	3V4	5.4VDC	100VDC	105VDC	0V.	7VDC	2V.	8.3VDC

†TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1T4	*	†8.2KΩ	†8.2KΩ	Inf	*	4.5Meg	*
V 2	1R5	*	†3.2KΩ	†8.2KΩ	100KΩ	*	2.5Meg	*
V 3	1T4	*	†3.2KΩ	†3.2KΩ	†8.2KΩ	*	2.5Meg	*
V 4	1U5	*	† 1 Meg	† 5 Meg	500KΩ	1 Meg	5 Meg	*
V 5	3V4	*	†540Ω	†250Ω	Inf	*	1 Meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† Measured from output of M1.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal colerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

MOTOROLA MODELS
7VT1, 7VT2, 7VT5, 9VT1, 9VT5
(CH. TS-18)

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MODEL 7VT5

MOTOROLA MODELS
7VT1, 7VT2, 7VT5, 9VT1, 9VT5
(CH. TS-18)

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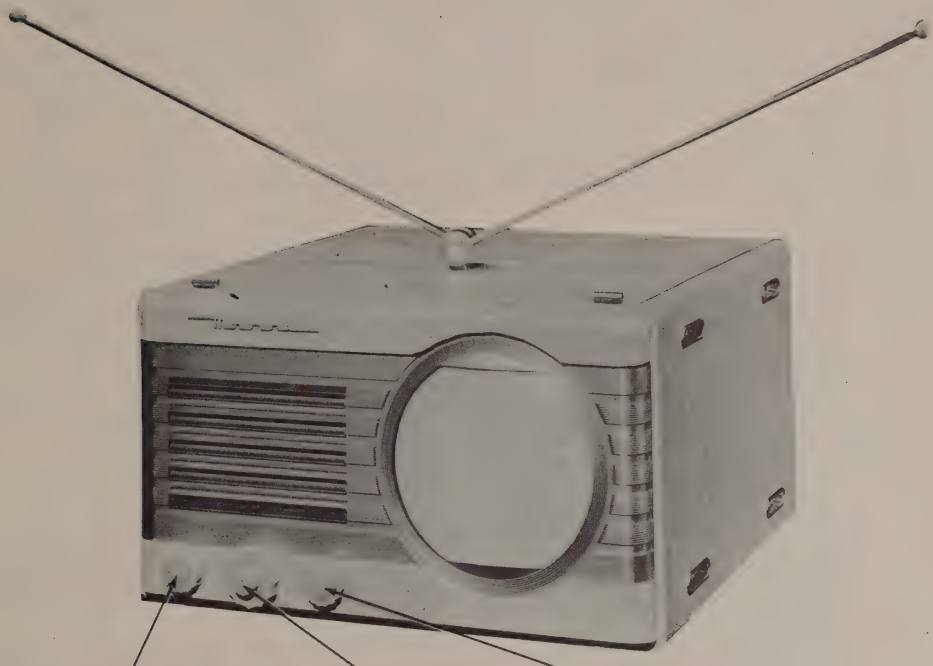
MOTOROLA
MODELS 7VT1, 7VT2, 7VT5, (Ch. TS-18)



MOTOROLA
MODELS 7VT1, 7VT2, 7VT5, (Ch. TS-18)

MOTOROLA 7VT5

TRADE NAME	Motorola, Models 7VT1, 7VT2, 7VT5, 9VT1, 9VT5 (Chassis TS-18)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Ill.
TYPE SET	Television Receiver
TUBES	Sixteen
POWER SUPPLY	110 - 120 Volts AC - 60 Cycle
RATING	.9 Amp at 117 Volts AC
TUNING RANGE	Channels 2 thru 13.

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Voltage and Resistance Measurements 8

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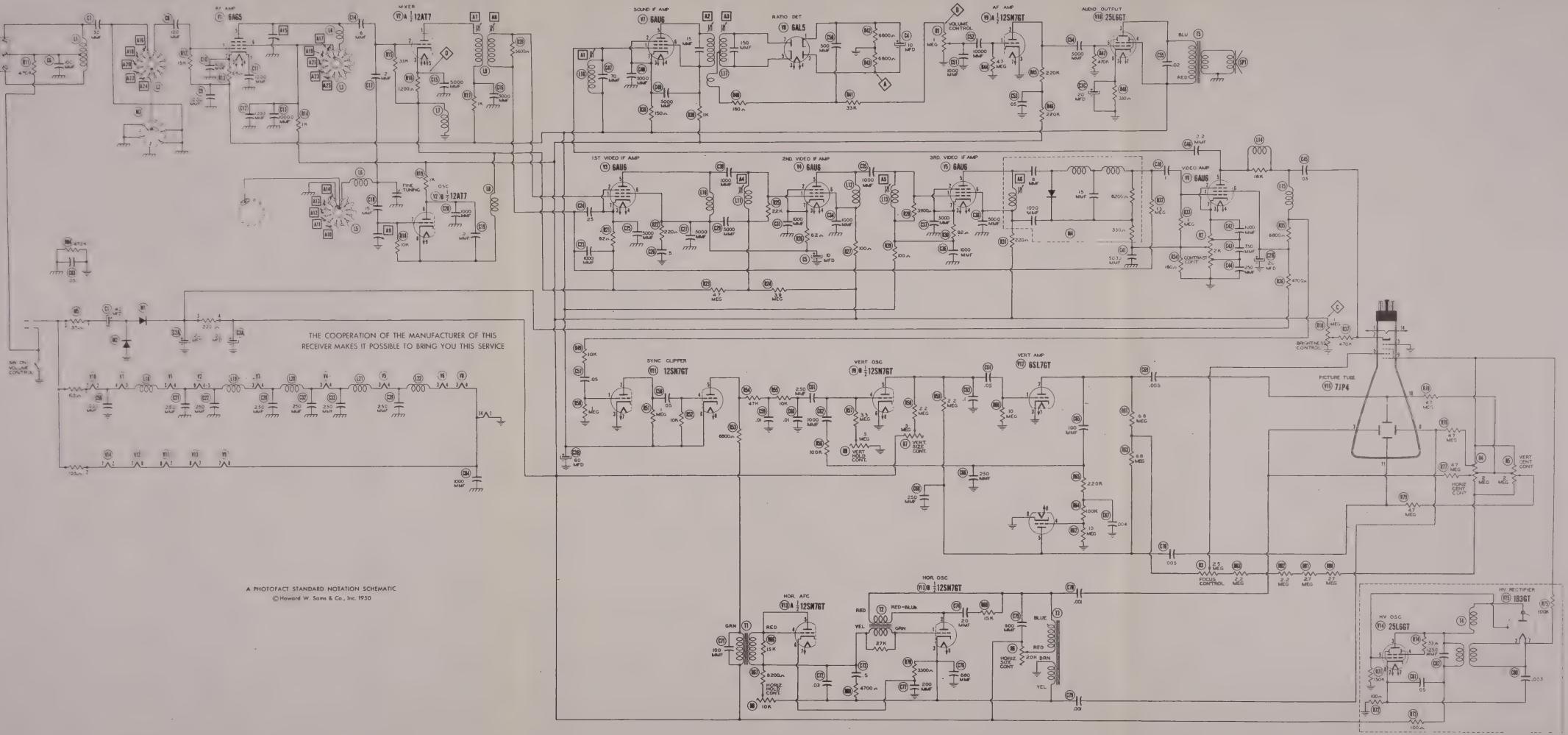
RF AMP
Y1 6AG5
MIXER
Y2 A 1/2 12AT7
OSC
Y2 B 1/2 12AT7
SOUND IF AMP
Y7 6AU6
RATIO DET
Y8 6AL5
AF AMP
Y9 A 1/2 12SN7GT
VOLUME CONTROL
AUDIO OUTPUT
Y10 25L6GT
1ST. VIDEO IF AMP
Y3 6AU6
2ND. VIDEO IF AMP
Y4 6AU6
3RD. VIDEO IF AMP
Y5 6AU6
VIDEO AMP
Y6 6AU6
CONTRAST CONT
SYNC CLIPPER
Y11 12SN7GT
VERT OSC
Y9 B 1/2 12SN7GT
VERT AMP
Y12 6SL7GT
VERT HOLD CONT.
VERT SIZE CONT.
VERT CENT CONT
PICTURE TUBE
Y15 7JP4
BRIGHTNESS CONTROL
FOCUS CONTROL
HOR. AFC
Y13 A 1/2 12SN7GT
HOR. OSC
Y13 B 1/2 12SN7GT
HORIZ HOLD CONT.
HORIZ SIZE CONT.
HORIZ CENT CONT
HV RECTIFIER
Y15 1B3GT
HV OSC
Y14 25L6GT
FINE TUNING
ON VOLUME CONTROL
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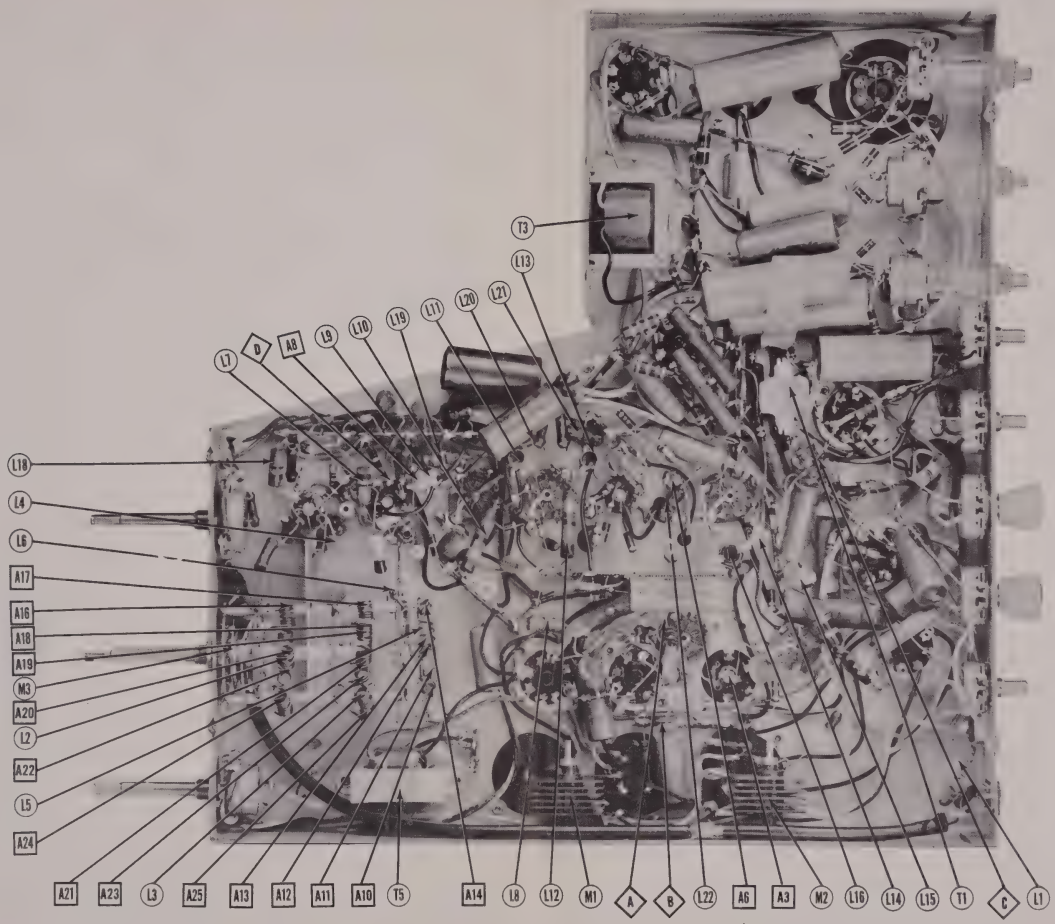
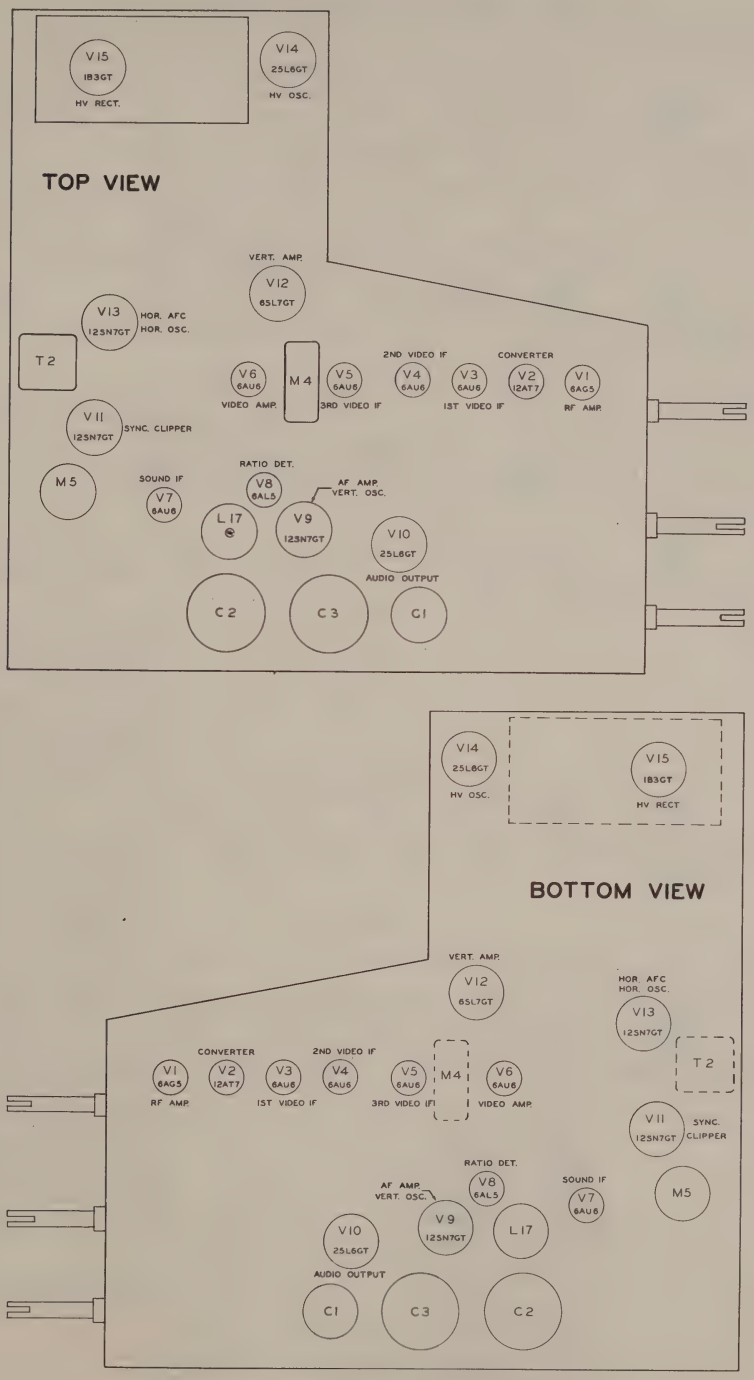
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If complete receiver alignment is to be performed, it can most conveniently be done in the order outlined.
If the picture tube is removed, it will be necessary to short pins 1 and 14 of the picture tube socket to complete the filament circuit.
Use an isolation transformer to protect the test equipment.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect a 10KΩ isolating resistor in series with the common lead of the VTVM and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to pin 1 (Grid) of 6AU6 (V6). Low side to B-.	4.5MC (Unmod.)	Any channel unused locally	DC Probe to Point (A) Common to B-.	A1, A2	Adjust for maximum deflection.
2.	.01MFD	"	"	"	DC Probe to Point (B) Common to B-.	A3	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ~ modulation and 450KC sweep. Use 120 ~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01MFD	High side to pin 1 (Grid) of 6AU6 (V6). Low side to B-.	4.5MC (450KC Sweep)	4.5MC	Any channel unused locally	Vert. Amp. to Point (A) Low side to B-.	A1, A2	Adjust for maximum amplitude and symmetry as per Fig 1.
2.	.01MFD	"	"	"	"	Vert. Amp. to Point (B) Low side to B-.	A3	Adjust A3 so 4.5MC marker occurs at center of crossover lines as per Fig 2. SLIGHTLY retouch A2 for maximum amplitude and straightness of crossover lines.

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Connect the negative lead of a 3 volt battery through 10KΩ to the junction of R20 and C24. Connect the positive lead to B-.
Unsolder one end of the oscillator cathode choke (L7), to disable the local oscillator.
If a wide band scope is used, connect a 1000MMF capacitor across the vertical amp. input terminals.
Set contrast control to minimum.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	.01MFD	High side to pin 1 (Grid) of 6AU6 (V3). Low side to B-.	24.6MC (12MC Sweep)	22.9MC 26.3MC	Any	Vert. Amp. to Point (C) Low side to B-.	A4	Adjust A4 for peak response near 26MC.
4.	.01MFD	"	"	"	"	"	A5	Adjust A5 for peak response near 24.6MC.
5.	.01MFD	"	"	"	"	"	A6	Adjust A6 to place 22.9MC marker at 50% response on the low frequency slope of the response curve.
6.	.01MFD	"	"	"	"	"	A4	Adjust A4 to place 26.3MC marker at 50% response on the high frequency slope of the response curve. If necessary slightly retouch A4 thru A7 to obtain proper response as shown in Fig 3.

1st IF TRANSFORMER ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to ungrounded tube shield floating over converter tube (V2). Low side to B-.	24.6MC (12MC Sweep)	23.1MC 26.1MC	Any	Vert. Amp. to Point (C) Low side to B-.	A7, A8	Turn cores of A7 and A8 fully counter clockwise (fully out). Bring both cores in simultaneously until 23.1MC marker occurs at 50% response on the low frequency slope and 26.1MC marker occurs at 50% response on the high frequency slope of response curve as shown in Fig 4. If 2 peaks appear, the dip between them should not exceed 10%.

OSCILLATOR ALIGNMENT

Resolder the cathode choke (L7).
Set the fine tuning control to the mid-position of its range.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to upper "A" terminal. Low side to "G" terminal.	195MC (12MC Sweep)	193.25MC 197.75MC	10	Vert. Amp. to Point (C) Low side to B-.	A9	Adjust for response curve similar to Fig. 7 with markers as shown.
9.	Direct	"	177MC (12MC SWP)	175.25MC 179.75MC	7	"		Check all high band channels to see that markers placement as shown in Fig 7 occurs within 22 1/2 degrees of the mid-position of the fine tuning control range. If may be necessary to expand or compress the turns of L6 to bring channel 13 within the proper range. If L6 is adjusted repeat steps 8 and 9.
			183MC (12MC SWP)	181.25MC 185.75MC	8			
			189MC (12MC SWP)	187.25MC 191.75MC	9			
			201MC (12MC SWP)	199.25MC 203.75MC	11			
			207MC (12MC SWP)	205.25MC 209.75MC	12			
			213MC (12MC SWP)	211.25MC 215.75MC	13			
10.	Direct	"	85MC (12MC SWP)	83.25MC 87.75MC	6	"	A10	Expand or compress coil turns to place markers as shown in Fig 7.
			79MC (12MC SWP)	77.25MC 81.75MC	5		A11	
			69MC (12MC SWP)	67.25MC 71.75MC	4		A12	
			63MC (12MC SWP)	61.25MC 65.75MC	3		A13	
			57MC (12MC SWP)	55.25MC 59.75MC	2		A14	

ANTENNA AND RF ALIGNMENT

Unsolder one end of the cathode choke (L7).
Note that on the low band channels, the antenna coils are adjusted at the video carrier frequency of each channel and the RF coils are adjusted at the sound carrier frequency of each channel.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Direct	High side to upper "A" terminal. Low side to "G" terminal.	195MC (12MC SWP)	195MC	10	Vert. Amp. to Point ⓓ Low side to B-.	A15	Adjust to place 195MC marker at peak of response curve as per Fig 5.
12.	Direct	"	177MC (12MC SWP)	177MC	7	"		Check all high band channels for response curve similar to Fig 5. Note the possible variation. If necessary slightly expand or compress L4 to obtain proper response on channel 13. If L4 is adjusted repeat steps 11 and 12.
			183MC (12MC SWP)	183MC	8			
			189MC (12MC SWP)	189MC	9			
			201MC (12MC SWP)	201MC	11			
			207MC (12MC SWP)	207MC	12			
			213MC (12MC SWP)	213MC	13			
13.	Direct	"	85MC (12MC SWP)	83.25MC 87.75MC	6	"	A16 A17	Expand or compress turns of antenna coil (A16) to place 83.25MC marker as shown in Fig 6. Adjust RF coil turns (A17) to place 87.75MC marker as shown in Fig. 6.
14.	Direct	"	79MC (12MC SWP)	77.25MC 81.75MC	5	"	A18 A19	Adjust coil turns to place markers as shown in Fig 6, making sure the antenna coil is adjusted to place the video marker and the RF coil is adjusted to place the sound marker. Note the possible variations.
			69MC (12MC SWP)	67.25MC 71.75MC	4		A20 A21	
			63MC (12MC SWP)	61.25MC 65.75MC	3		A22 A23	
			57MC (12MC SWP)	55.25MC 59.75MC	2		A24 A25	

FIG. 1

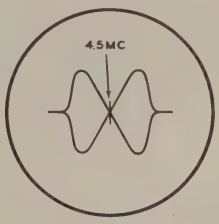


FIG. 2

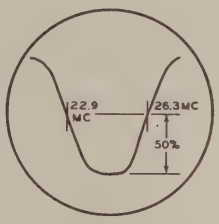


FIG. 3

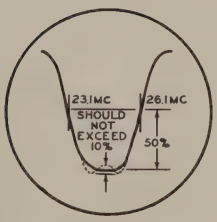


FIG. 4

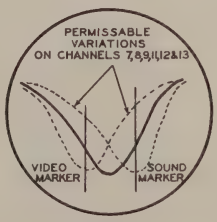


FIG. 5

FIG. 6

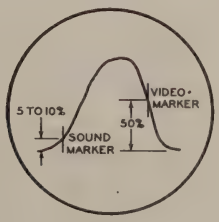


FIG. 7

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	#0V	#.6VDC	52VAC	48VAC	#105VDC	#105VDC	#.6VDC		
V 2	12AT7	107VDC	-1VDC	2.8VDC	41VAC	41VAC	215VDC	§-7.5VDC	.1VDC	48VAC
V 3	6AU6	-.1VDC	.8VDC	41VAC	34VAC	120VDC	120VDC	.8VDC		
V 4	6AU6	♦.2VDC	♦.8VDC	34VAC	27VAC	♦100VDC	♦100VDC	♦.8VDC		
V 5	6AU6	#.7VDC	#1.3VDC	27VAC	20VAC	#110VDC	#110VDC	#1.3VDC		
V 6	6AU6	0V	4.9VDC	19.5VAC	13VAC	215VDC	232VDC	4.9VDC		
V 7	6AU6	#0V	#1VDC	53VAC	59VAC	#107VDC	#107VDC	#1VDC		
V 8	6AL5	.3VDC	-.3VDC	13VAC	6.3VAC	0V	0V	0V		
V 9	12SN7GT	-.5VDC	17VDC	0V	-.7VDC	7VDC 30VDC	0V	19.5VAC	6.5VAC	
V 10	25L6GT	0V	59VAC	105VDC	110VDC	0V	0V	83VAC	9.7VDC	
V 11	12SN7GT	-1VDC‡‡	11VDC	0V	#-.3VDC	#70VDC	0V	34VAC	48VAC	
V 12	6SL7GT	‡-2.7VDC	‡450VDC	0V	‡1.1VDC	‡320VDC	0V	55VAC	48VAC	
V 13	12SN7GT	-40VDC -43VDC	245VDC 120VDC	3.1VDC	-50VDC	-50VDC	6.6VDC	19.5VAC	34VAC	
V 14	25L6GT	0V	55VAC	225VDC	225VDC	-37VDC	0V	83VAC	3.7VDC	
V 15	1B3GT	* DO NOT MEASURE								

PINS		1	2	3	5	7	8	9	10	11	14
V16	7JP4	0V	0V 220VDC	0V	*	*	*	*	*	*	6.5VAC

§ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT MEASURE
# MEASURED FROM PIN 4 OF V10
♦ MEASURED FROM PIN 6 OF V3
‡ VOLTAGE WILL VARY WITH SETTING OF VERT. SIZE AND VERT. HOLD CONTROLS

RESISTANCE READINGS

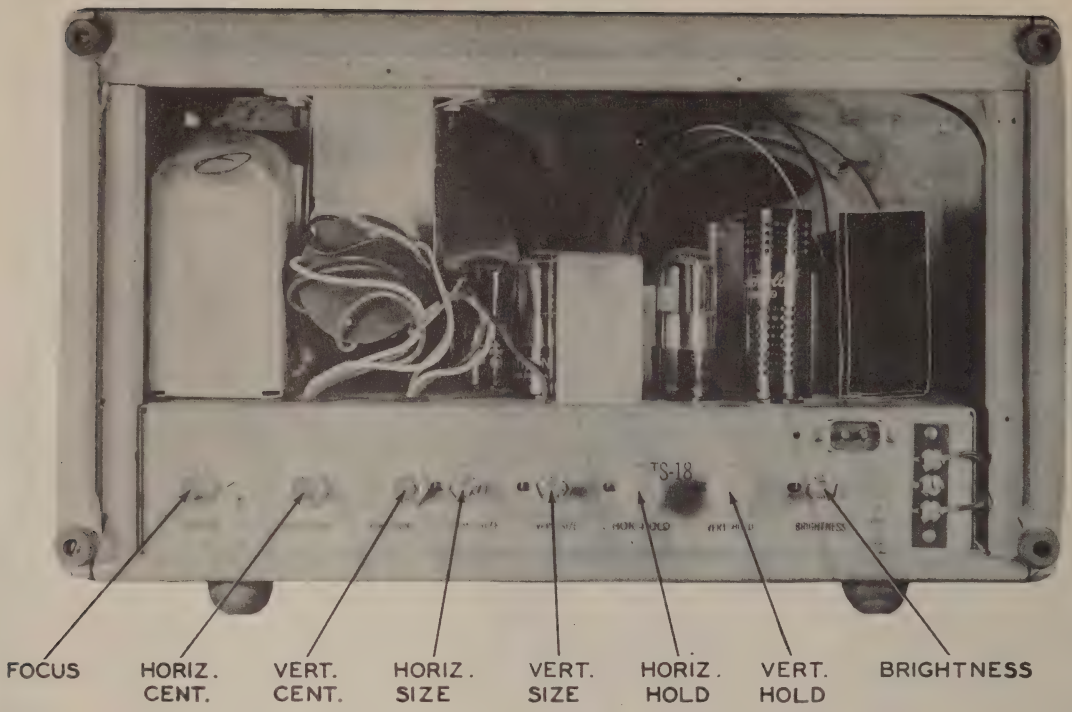
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	#15KΩ	#68Ω	28Ω	26Ω	†1.2KΩ	†1.2KΩ	#68Ω		
V 2	12AT7	#1000Ω	33KΩ	1.2KΩ	23Ω	23Ω	†1.2KΩ	10KΩ	2Ω	26Ω
V 3	6AU6	1.5 Meg.	82Ω	23Ω	19.5Ω	♦0Ω	♦0Ω	82Ω		
V 4	6AU6	†2 Meg.	♦82Ω	19Ω	14.8Ω	†300Ω	†300Ω	♦82Ω		
V 5	6AU6	#100Ω	#182Ω	13.8Ω	9.6Ω	†440Ω	†440Ω	#182Ω		
V 6	6AU6	1 Meg.	1.5KΩ	8.6Ω	4.2Ω	†11.5KΩ	†4.7KΩ	1.5KΩ		
V 7	6AU6	#1Ω	150Ω	29Ω	32Ω	†1.2KΩ	†1.2KΩ	150Ω		
V 8	6AL5	6.8KΩ	6.8KΩ	4.2Ω	1Ω	1 Meg.	470KΩ	1 Meg.		
V 9	12SN7GT	4.7 Meg.	†440KΩ	0Ω	8.3 Meg. 3.3 Meg.	†7.2 Meg †2.2Meg.	0Ω	10Ω	1Ω	
V 10	25L6GT	Inf.	32Ω	#220Ω	#0Ω	470KΩ	Inf.	40Ω	30Ω	
V 11	12SN7GT	1 Meg.	#1 Meg.	0Ω	#10KΩ	†7KΩ	#0Ω	15Ω	21Ω	
V 12	6SL7GT	10 Meg.	▲20 Meg.	0Ω	10 Meg.	▲20 Meg.	0Ω	23.5Ω	21Ω	
V 13	12SN7GT	18 KΩ 8.5KΩ	†20KΩ †520Ω	200Ω	18KΩ 8.5KΩ	18KΩ 8.5KΩ	3.5KΩ	10Ω	15Ω	
V 14	25L6GT	Inf.	23.5Ω	†320Ω	†350Ω	150KΩ	0Ω	38Ω	100Ω	
V 15	1B3GT	Inf.	50 Meg.	Inf.	Inf.	Inf.	50 Meg.	50 Meg.	Inf.	TOP CAP †1000Ω

PINS		1	2	3	5	7	8	9	10	11	14
V16	7JP4	0Ω	†750KΩ †500KΩ	0Ω	▲12 Meg.	▲5.5 Meg.	▲5.5 Meg.	▲100KΩ	▲5.5 Meg.	▲5.5 Meg.	1.5Ω

† MEASURED FROM PIN 4 OF M5
# MEASURED FROM PIN 4 OF V10
♦ MEASURED FROM PIN 6 OF V3
▲ MEASURED FROM PIN 2 OF V15

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

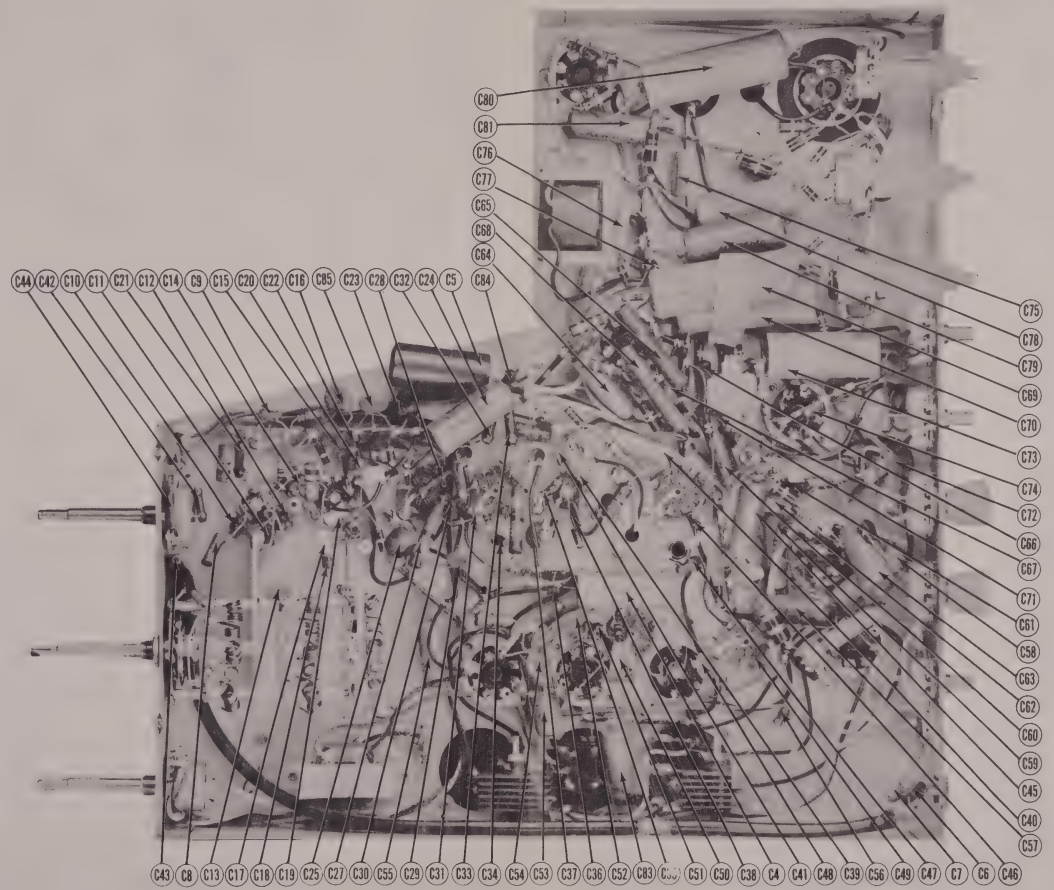
OR AND ALIGNMENT IDENTIFICATION



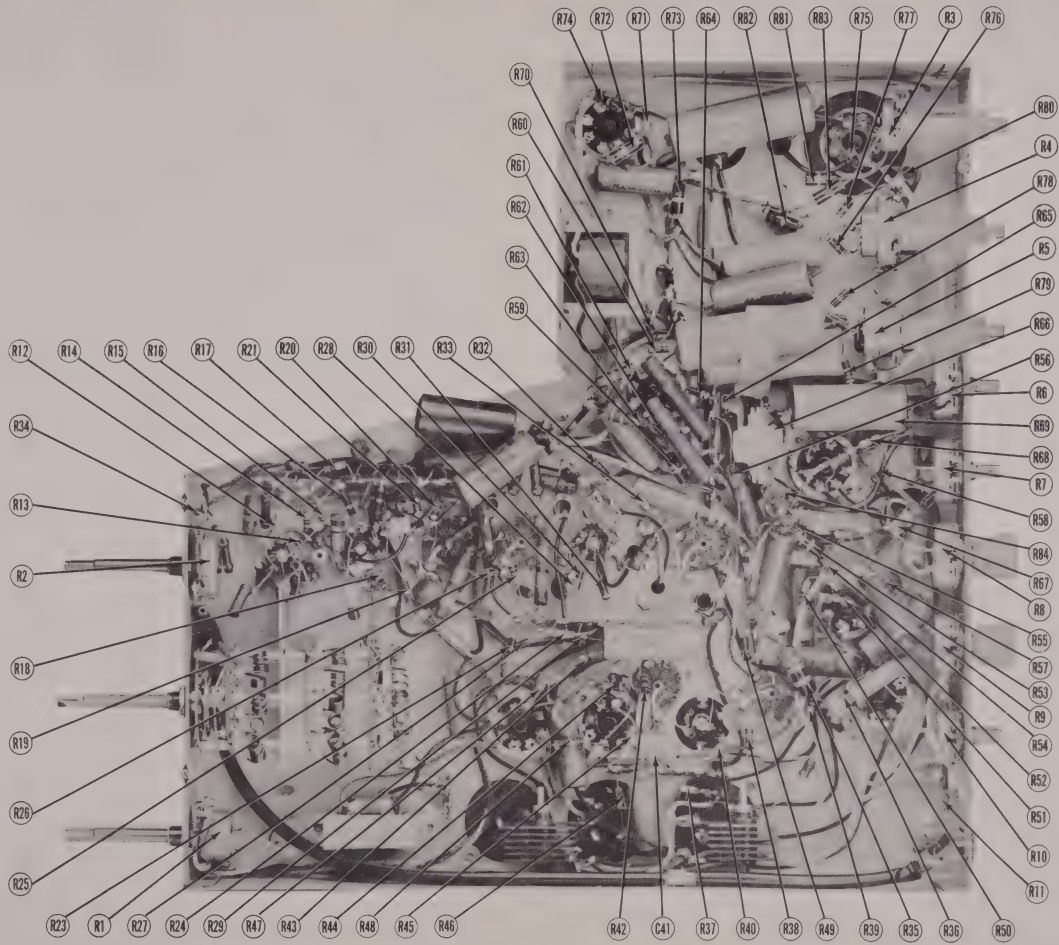
CABINET–REAR VIEW

DISASSEMBLY INSTRUCTIONS

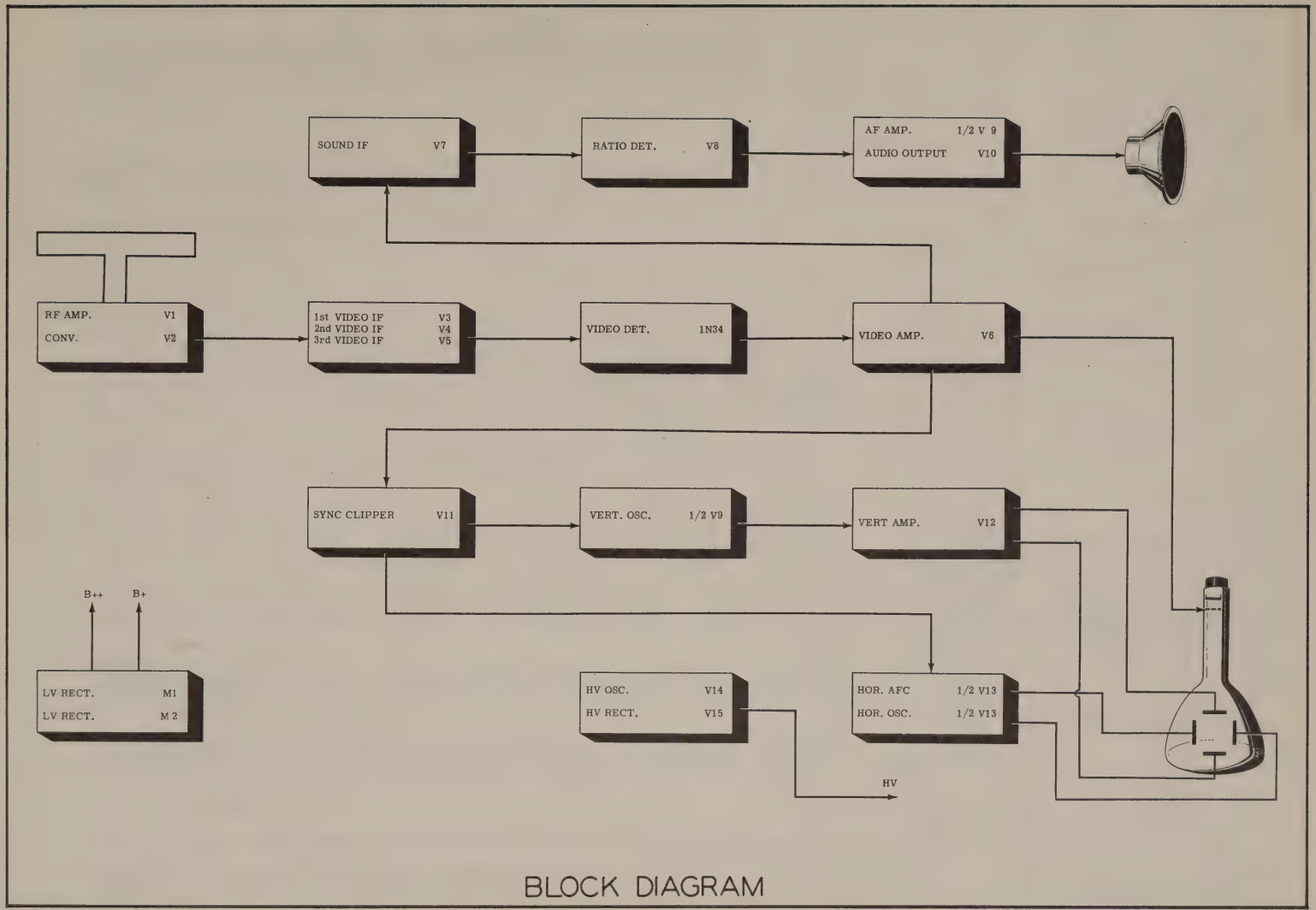
1. Remove three push-on type control knobs.
2. Remove one 1/4" hex head bolt and six screws holding rear cover. Remove cover.
3. Loosen two screws holding antenna terminal lugs. Remove lugs.
4. Disconnect speaker plug.
5. Remove picture tube base socket.
6. Remove four 1/4" hex head bolts holding chassis. Remove chassis.
7. Remove four 5/16" hex nuts holding speaker. Remove speaker
8. Remove one 1/4" hex head bolt and two 11/32" hex nuts holding picture tube mounting bracket. Remove mounting bracket and tube.



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



BLOCK DIAGRAM

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	12AT7	12AT7	9A	
V3	1st Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd Video IF Amp.	6AU6	6AU6	7BK	
V6	Video Amp.	6AU6	6AU6	7BK	
V7	Sound IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Det.	6AL5	6AL5	6BT	
V9	AF Amp.-Vert. Osc.	12SN7GT	12SN7GT	8BD	
V10	Audio Output	25L6GT	25L6GT	7AC	
V11	Sync. Clipper	12SN7GT	12SN7GT	8BD	
V12	Vert. Amp.	6SL7GT	6SL7GT	8BD	
V13	Hor. AFC-Hor. Osc.	12SN7GT	12SN7GT	8BD	
V14	HV Osc.	25L6GT	25L6GT	7AC	
V15	HV Rectifier	1B3GT	1B3GT	3C	
V16A	Picture Tube	7JP4	7JP4	14G	
B	Picture Tube	8BP4	8BP4	14G	Used in models 9VT1, 9VT5.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	140	150	23B484097	AFH28D	UP6AJ333		D6282	Voltage Doubler Cap.
C2A	120	300	23B90134	AFH244G	UP9BJ993		TVL-46	◓ Filter
B	20	300						▲ Low Pass Filter
C3A	100	300	23B90136	AFH20G12D4A	UP9CJ994		TVL-51	◓ Filter
B	60	150						■ Filter
C	20	25						▲ Output Cathode Bypass
C4	10	50	23A90205	PRS50/10	BR105		TVA-14	Stabilizing Cap.
C5	10	450	23K489031	PRS450/12	BR1045		TVA-21	Decoupling *
C6	100	300	21R6631	1469-0001	5R5T1	NPOM-100	MS-31	Fixed Padder
C7	30		21K470329			GP1K-33		RF Coupling
C8	100		21B77286	1468-0001	5W5T1	GP1K-100	1FM-31	RF Coupling
C9	1000		21K478410	1468-001	1W5D1	GP2L-001	1FM-31	RF Bypass
C10	1000		21K478410	1468-001	1W5D1	GP2L-001	1FM-21	RF Cathode Bypass
C11	1000		21K478410	1468-001	1W5D1	GP2L-001	1FM-21	RF Cathode Bypass
C12	1000		21K478410	1468-001	1W5D1	GP2L-001	1FM-21	RF Decoupling
C13	10000		21K482726	1467-01	1D3S1	821-01	36C1	RF Decoupling
C14	6		21K470324					RF Coupling
C15	5000		21A470789	1467-005	1D5D5	811-005	29C1	Mixer Cathode Bypass
C16	5000		21A470789	1467-005	1D5D5	811-005	29C1	Mixer Plate Decoupling
C17	2		21K478280					Osc. Coupling
C18	15		21K790541			GP1K-15	MS-415	Osc. Grid Cap.
C19	2		21K478280					Osc. Feedback
C20	1000		21K478410	1468-001	1W5D1	GP2L-001	1FM-21	Osc. Plate Bypass
C21	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	RF Filament Bypass
C22	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	Mixer Filament Bypass
C23	1000		21K478410	1468-001	1W5D1	GP2L-001	1FM-21	AGC Filter
C24	.25	200	8R9810	P488-25	GT2P25		TC-2	AGC Filter
C25	5000		21A470789	1467-005	1D5D5	811-005	29C1	1st V. IF Cath. Bypass
C26	.5	200	8A484814	P288-5	GT2P5		TC-5	Decoupling *
C27	5000		21A470789	1467-005	1D5D5	811-005	29C1	Decoupling
C28	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	1st V. IF Fil. Bypass
C29	5000		21A470789	1467-005	1D5D5	811-005	29C1	2nd V. IF Grid Decoupling
C30	1000		21K478410	1468-001	1W5D1	GP2L-001	1FM-21	IF Coupling
C31	1000		21K478410	1468-001	1W5D1	GP2L-001	1FM-21	2nd V. IF Cath. Bypass
C32	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	2nd V. IF Fil. Bypass
C33	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	2nd V. IF Fil. Bypass
C34	1000		21K478410	1468-001	1W5D1	GP2L-001	1FM-21	2nd V. IF Decoupling
C35	1000		21K478410	1468-001	1W5D1	GP2L-001	1FM-21	3rd V. IF Decoupling
C36	1000		21K478410	1468-001	1W5D1	GP2L-001	1FM-21	3rd V. IF Decoupling
C37	5000		21A470789	1467-005	1D5D5	811-005	29C1	3rd V. IF Cath. Bypass
C38	5000		21A470789	1467-005	1D5D5	811-005	29C1	3rd V. IF Decoupling
C39	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	3rd V. IF Fil. Bypass
C40	.1	100	8R9814	P288-1	GT2P1		TM-1	Video Coupling
C41	5000		21A470789	1467-005	1D5D5	811-005	29C1	Video Amp. Cath. Bypass
C42	1000		21K780599	1468-001	1W5D1	GP2L-001	1FM-21	Video Amp. Cath. Bypass
C43	750		21K780598	1468-00075	1W5T8	GP2K-750	1FM-325	Video Amp. Cath. Bypass
C44	250		21K77375	1468-00025	5W5T25	GP2K-250	TM-15	Video Amp. Cath. Bypass
C45	.05	600	8R9873	P688-05	GT6S5			Video Coupling
C46	2.2		21A478274					S. IF Coupling
C47	70		21K470328		5R5Q7		MS-47	Fixed Trimmer
C48	5000		21A470789	1467-005	1D5D5	811-005	29C1	S. IF Cath. Bypass
C49	5000		21A470789	1467-005	1D5D5	811-005	29C1	S. IF Decoupling
C50	500	500	21R6590	1468-0005	5W5T5	GP2K-500	1FM-35	Diode Load Cap.
C51	1000		21K478410	1468-001	1W5D1	GP2L-001	1FM-21	De-emphasis
C52	10000		21K482726	P688-01	GT6S1	821-01	36C1	Audio Coupling
C53	.05	600	8R9819	P688-05	GT6S5		TM-15	AF Plate Decoupling
C54	5000		21A470789	P688-005	GT6D5	811-005	29C1	Audio Coupling
C55	.02	600	8R9840	P688-02	GT6S2		TM-12	Output Plate Bypass
C56	1000		21K478410	1468-001	1W5D1	GP2L-001	1FM-21	S. IF Fil. Bypass
C57	.05	600	8R9873	P688-05	GT6S5		TM-15	Sync. Coupling
C58	.05	600	8R9873	P688-05	GT6S5		TM-15	Sync. Coupling
C59	.01	600	6R9834	P688-01	GT6S1	GP2-335-01	TM-11	Integrator Net.
C60	.01	600	8R9834	P688-01	GT6S1	GP2-335-01	TM-11	Integrator Net.
C61	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	Vert. Sync. Coupling
C62	1000	500	21R6663	1468-001	1W5D1	GP2L-001	1FM-21	Vert. Osc. Feedback
C63	.1	600	8R9874	P688-1	GT6P1		TM-1	Vert. Discharge
C64	.05	600	8R9873	P688-05	GT6S5		TM-15	Vert. Sweep Coupling
C65	100		21B77286	1468-0001	5W5T1	GP1K-100	1FM-31	Voltage Divider
C66	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	Voltage Divider
C67	.004	600	8R471156	P688-004	GT6D4		TM-24	Integrator Net.
C68	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	Vert. Output Plate Bypass
C69	.005	6000	8A471348	7584-005	DSTH-60D5		TVM-256	Vert. Sweep Coupling
C70	.005	6000	8A471348	7584-005	DSTH-60D5		TVM-256	Vert. Sweep Coupling
C71	100		21B77286	1468-0001	5W5T1	GP1K-100	1FM-31	Fixed Trimmer

CAPACI

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMEN: MOTOROLA PART No.	REPLACEMEN: AEROVOX PART No.	COR DU PAR
C72	.03	600	8R9860	P688-03	GT6
C73	.5	200	8R9822	P288-5	GT2
C74	20		21K470322		5R5
C75	900	2000	21A790475		
C76	680	2000	21K790476		
C77	200	2000	21K790477		
C78	.001	6000	8A480255	7584-001	DSTH
C79	.001	6000	8A480255	7584-001	DSTH
C80	.005	6000	8A471348	7584-005	DSTH
C81	.05	600	8R9819	P688-05	GT6
C82	1250	500	21R2742		
C83	.05	600	8R9819	P688-05	GT6
C84	1000		21K478410	1468-001	1W5

* Not used in all models.

CO

ITEM No.	RATING: RESIST-ANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: IRC PART No.	CL PA
R1A	1 Meg.	½	18A90142	Q13-137	AM-
B	Shaft		Not Req.	Not Req.	KSS-
C	Switch		Not Req.	76-1	SW-
R2	2000Ω	½	18A780359		
R3	2.5 Meg.	½	18A90148	Q11-239 §	
R4	2 Meg.	½	18A484192		
R5	2 Meg.	½	18A478285		AT-1
R6	20KΩ	½	18A90144	Q16-119	
R7	5 Meg.	½	18A90145	Q11-141	M-85
R8	10KΩ	½	18A780098	Q11-116	M-27
R9	5 Meg.	½	18A90145	Q11-141	M-85
R10	1 Meg.	½	18A90147	Q11-137	M-61

Use original insulated spacer bushing and shaft with ring should be removed from new control to allow tong
§ Saw shaft of new control to desired length, and file s spacer bushing and shaft with new control.

RE

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: IRC PART No.
R11	470KΩ	½	6R6377	BTS-470K
R12	15KΩ	½	6R6477	BTS-15K
R13	68Ω	½	6R2039	
R14	1000Ω	½	6R6229	BTS-1000
R15	33KΩ	½	6R6410	BTS-33K
R16	1200Ω	½	6R6393	BTS-1200
R17	1000Ω	½	6R6229	BTS-1000
R18	10KΩ	½	6R6320	BTS-10K
R19	1000Ω	½	6R6229	BTS-1000
R20	5600Ω	½	6R6117	
R21	82Ω	½	6R2035	
R22	220Ω	½	6R6270	
R23	4.7 Meg.	½	6R6446	BTS-4.7 Meg
R24	3.9 Meg.	½	6R490110	BTS-3.9 Meg
R25	22KΩ	½	6R6397	BTS-22K
R26	82Ω	½	6R2035	
R27	100Ω	½	6R6326	
R28	3900Ω	½	6R5659	BTS-3900
R29	100Ω	½	6R6326	
R30	82Ω	½	6R2035	
R31	220Ω	½	6R6270	
R32	1.5 Meg.	½	6R6460	BTS-1.5 Meg
R33	1 Meg.	½	6R6046	BTS-1 Meg.
R34	180Ω	½	6R5660	
R35	6800Ω	2	6R5690	BT-2-6800
R36	4700Ω	2	6R5671	BT-2-4700
R37	470KΩ	½	6R6377	BTS-470K
R38	150Ω	½	6R6373	
R39	1000Ω	½	6R6229	BTS-1000
R40	180Ω	½	6R5660	
R41	33KΩ	½	6R6410	BTS-33K
R42	6800Ω	½	6R6428	BTS-6800
R43	6800Ω	½	6R6428	BTS-6800
R44	4.7 Meg.	½	6R6446	BTS-4.7 Meg
R45	220KΩ	½	6R6407	BTS-220K
R46	220KΩ	½	6R6407	BTS-220K
R47	470KΩ	½	6R6377	BTS-470K
R48	330Ω	½	6R6022	BW-½-330
R49	10KΩ	½	6R6320	BTS-10K
R50	1 Meg.	½	6R6046	BTS-1 Meg.
R51	1 Meg.	½	6R6046	BTS-1 Meg.
R52	10KΩ	½	6R6320	BTS-10K
R53	6800Ω	1	6R5691	BTA-6800
R54	47KΩ	½	6R6048	BTS-47K
R55	10KΩ	½	6R6320	BTS-10K
R56	100KΩ	½	6R6031	BTS-100K
R57	3.3 Meg.	½	6R6497	BTS-3.3 Meg
R58	2.2 Meg.	½	6R6433	BTS-2.2 Meg
R59	22 Meg.	1	6R488252	BTA-22 Meg.
R60	10 Meg.	1	6R5622	BTS-10 Meg.
R61	6.8 Meg.	1	6R488157	BTA-6.8 Meg
R62	10 Meg.	1	6R5622	BTS-10 Meg.
R63	6.8 Meg.	1	6R488157	BTA-6.8 Meg
R64	100KΩ	½	6R6031	BTS-100K
R65	220KΩ	½	6R6407	BTS-220K
R66	15KΩ	½	6R6477	BTS-15K
R67	8200Ω	1	6R5610	BTA-8200
R68	4700Ω	½	6R6080	BTS-4700
R69	15KΩ	½	6R6477	BTS-15K
R70	3300Ω	½	6R5581	BTS-3300

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	12AT7	12AT7	9A	
V3	1st Video IF Amp.	6AU8	6AU8	7BK	
V4	2nd Video IF Amp.	6AU8	6AU8	7BK	
V5	3rd Video IF Amp.	6AU6	6AU6	7BK	
V6	Video Amp.	6AU8	6AU8	7BK	
V7	Sound IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Det.	6AL5	6AL5	6BT	
V9	AF Amp.-Vert. Osc.	12SN7GT	12SN7GT	8BD	
V10	Audio Output	25L6GT	25L6GT	7AC	
V11	Sync. Clipper	12SN7GT	12SN7GT	8BD	
V12	Vert. Amp.	6SL7GT	6SL7GT	8BD	
V13	Hor. AFC-Hor. Osc.	12SN7GT	12SN7GT	8BD	
V14	HV Osc.	25L6GT	25L6GT	7AC	
V15	HV Rectifier	1B3GT	1B3GT	3C	
V16A	Picture Tube	72P4	72P4	14G	
B	Picture Tube	8BP4	8BP4	14G	Used in models 9VT1, 9VT5.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	140	150	23B48097	AFH28D	UP6AJ333		D6282	Voltage Doubler Cap.
C2A	120	300	23B90134	AFH244G	UP9BJ933		TVL-46	▲ Filter
B	30	300						▲ Low Pass Filter
C3A	100	300	23B90136	AFH20G12D4A	UP9CJ994		TVL-51	▲ Filter
B	50	150						▲ Filter
C	30	35						▲ Output Cathode Bypass
C4	10	50	23A90205	PRS50/10	BR105		TVA-14	Stabilizing Cap.
C5	10	450	23K48903	PRS450/12	BR1045		TVA-32	Decoupling *
C6	100	300	21R6531	1469-0001	SR5T1	NPOM-100	MS-31	Fixed Padder
C7	30		21K470239			GP1K-33		RF Coupling
C8	100		21B77286	1468-0001	5W5T1	GP1K-100	1FM-31	RF Coupling
C9	1000		21K47840	1468-001	1W5D1	GP2L-001	1FM-31	RF Bypass
C10	1000		21K47840	1468-001	1W5D1	GP2L-001	1FM-21	RF Cathode Bypass
C11	1000		21K47840	1468-001	1W5D1	GP2L-001	1FM-21	RF Cathode Bypass
C12	1000		21K47840	1468-001	1W5D1	GP2L-001	1FM-21	RF Decoupling
C13	10000		21K48278	1467-01	32L-01		39C1	RF Decoupling
C14	6		21K47032A					RF Coupling
C15	5000		21A47089	1467-005	1D5D5	811-005	29C1	Mixer Cathode Bypass
C16	5000		21A47089	1467-005	1D5D5	811-005	29C1	Mixer Plate Decoupling
C17	3		21K47280					Osc. Coupling
C18	15		21K7905			GP1K-15	MS-415	Osc. Grid Cap.
C19	2		21K47280					Osc. Feedback
C20	1000		21K47840	1468-001	1W5D1	GP2L-001	1FM-21	Osc. Plate Bypass
C21	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	RF Filament Bypass
C22	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	Mixer Filament Bypass
C23	1000		21K47840	1468-001	1W5D1	GP2L-001	1FM-21	AGC Filter
C24	.25	300	8R9810	P488-25	GT2P25		TC-2	AGC Filter
C25	5000		21A47089	1467-005	1D5D5	811-005	29C1	1st V. IF Cath. Bypass
C26	.5	300	5A484814	P288-5	GT2P5		TC-5	Decoupling *
C27	5000		21A47089	1467-005	1D5D5	811-005	29C1	Decoupling
C28	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	1st V. IF Fil. Bypass
C29	5000		21A47089	1467-005	1D5D5	811-005	29C1	2nd V. IF Grid Decoupling
C30	1000		21K47840	1468-001	1W5D1	GP2L-001	1FM-21	IF Coupling
C31	1000		21K47840	1468-001	1W5D1	GP2L-001	1FM-21	2nd V. IF Cath. Bypass
C32	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	2nd V. IF Fil. Bypass
C33	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	2nd V. IF Fil. Bypass
C34	1000		21K47840	1468-001	1W5D1	GP2L-001	1FM-21	2nd V. IF Decoupling
C35	1000		21K47840	1468-001	1W5D1	GP2L-001	1FM-21	3rd V. IF Decoupling
C36	1000		21K47840	1468-001	1W5D1	GP2L-001	1FM-21	3rd V. IF Decoupling
C37	5000		21A47089	1467-005	1D5D5	811-005	29C1	3rd V. IF Cath. Bypass
C38	5000		21A47089	1467-005	1D5D5	811-005	29C1	3rd V. IF Decoupling
C39	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	3rd V. IF Fil. Bypass
C40	.1	100	8R9814	P288-1	GT2P1	TM-1		Video Coupling
C41	5000		21A47089	1467-005	1D5D5	811-005	29C1	Video Amp. Cath. Bypass
C42	1000		21K78599	1468-001	1W5D1	GP2L-001	1FM-21	Video Amp. Cath. Bypass
C43	750		21K78599	1468-00075	1W5T8	GP2K-750	1FM-325	Video Amp. Cath. Bypass
C44	250		21K77375	1468-00025	5W5T25	GP2K-250	TM-15	Video Amp. Cath. Bypass
C45	.05	600	8R9873	P688-05	GT6S5			Video Coupling
C46	2.2		21A47827A					S. IF Coupling
C47	70		21K47032B				5R5Q7	Fixed Trimmer
C48	5000		21A47089	1467-005	1D5D5	811-005	29C1	S. IF Cath. Bypass
C49	5000		21A47089	1467-005	1D5D5	811-005	29C1	S. IF Decoupling
C50	.05	500	21R6590	1468-0005	5W5T5	GP2K-500	1FM-35	Diode Load Cap.
C51	1000		21K47840	1468-001	1W5D1	GP2L-001	1FM-21	De-emphasis
C52	10000		21K48278	P688-03	GT6S1	32L-01	36C1	Audio Coupling
C53	.05	600	8R9819	P688-05	GT6S5		TM-15	AF Plate Decoupling
C54	5000		21A47089	P688-005	GT6D5	811-005	29C1	Audio Coupling
C55	.05	600	8R9840	P688-05	GT6S2		TM-2	Output Plate Bypass
C56	1000		21K47840	1468-001	1W5D1	GP2L-001	1FM-21	S. IF Fil. Bypass
C57	.05	600	8R9873	P688-05	GT6S5		TM-15	Sync. Coupling
C58	.05	600	8R9873	P688-05	GT6S5		TM-15	Sync. Coupling
C59	.01	600	8R9834	P688-01	GT6S1	GP2-335-01	TM-1	Integrator Net.
C60	.01	600	8R9834	P688-01	GT6S1	GP2-335-01	TM-1	Integrator Net.
C61	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	Vert. Sync. Coupling
C62	1000	500	21R6563	1468-001	1W5D1	GP2L-001	1FM-21	Vert. Osc. Feedback
C63	.1	600	8R9874	P688-1	GT6P1		TM-1	Vert. Discharge
C64	.05	600	8R9873	P688-05	GT6S5		TM-15	Vert. Sweep Coupling
C65	100		21B77286	1468-0001	5W5T1	GP1K-100	1FM-31	Voltage Divider
C66	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	Voltage Divider
C67	.004	600	21R47156	P688-004	GT6D4		TM-24	Integrator Net.
C68	250		21K77375	1468-00025	5W5T25	GP2K-250	1FM-325	Vert. Output Plate Bypass
C69	.005	6000	8A47134	7584-005	D6T8-60D5		TVM-256	Vert. Sweep Coupling
C70	.005	6000	8A47134	7584-005	D6T8-60D5		TVM-256	Vert. Sweep Coupling
C71	100		21B77286	1468-0001	5W5T1	GP1K-100	1FM-31	Fixed Trimmer

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C72	.03	600	8R9860	P688-03	GT6S3		TM-13	AFC Filter
C73	.5	200	8R9828	P288-5	GT2P5		TC-5	AFC Filter
C74	20		21K47032		5R5Q2	NPOK-20	MS-42	Fixed Trimmer
C75	900	2000	21A790475					Fixed Trimmer
C76	680	2000	21K790476					Fixed Trimmer
C77	200	2000	21K790477					Differentiator Net.
C78	.001	6000	8A480255	7584-001	D8TH-60D1		TVM-215	Hor. Sweep Coupling
C79	.001	6000	8A480255	7584-001	D8TH-60D1		TVM-215	Hor. Sweep Coupling
C80	.005	6000	8A471348	7584-005	D8TH-60D5		TVM-256	HV Filter
C81	.05	600	8R9819	P688-05	GT6S5		TM-15	HV Osc. Decoupling
C82	1250	500	21R2742				TM-15	Fixed Trimmer
C83	.05	600	8R9819	P688-05	GT6S5		TM-15	Line Filter
C84	1000		21K478410	1468-001	1W5D1	GP2L-001	1FM-21	Filament Bypass *

* Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	18A90142	Q13-137	AM-63-Z	Volume control
B	Shaft		Not Req.	Not Req.	KS5-3	Attach to RIA per instructions
C	Switch		Not Req.	76-1	SW-A	Attach to RIA per instructions
R2	2000Ω		18A780359			Contrast control, tapped at 1000Ω, 1500Ω
R3	2.5 Meg.		18A90149	Q11-239 §		Focus control
R4	2 Meg.		18A484192			Horiz. centering control, tapped at 400KΩ and 1 Meg.
R5	2 Meg.		18A478285		AT-116 #	Vert. centering control, tapped at 1 meg.
R6	250KΩ		18A90144	Q16-118		Horiz. Size control
R7	5 Meg.		18A90145	Q11-141	M-85-S	Vert. size control
R8	10KΩ		18A780098	Q11-116	M-27-S	Horiz. hold control
R9	5 Meg.		18A90145	Q11-141	M-85-S	Vert. hold control
R10	1 Meg.		18A90147	Q11-137	M-61-S	Brightness control

Use original insulated spacer bushing and shaft with A. T. control. No additional shaft is required. Lock ring should be removed from new control to allow longue of insulated shaft to engaged into slot.
§ Saw shaft of new control to desired length, and file slot in shaft to duplicate original,use original insulated spacer bushing and shaft with new control.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R11	470KΩ	½	6R6377	BTS-470K	Ant. Isolation
R12	15KΩ	½	6R6477	BTS-15K	RF Grid
R13	68Ω	½	6R3039		RF Cathode
R14	1000Ω	½	6R6229	BTS-1000	RF Decoupling
R15	33KΩ	½	6R6410	BTS-33K	Conv. Grid
R16	1200Ω	½	6R6393	BTS-1200	Conv. Cathode
R17	1000Ω	½	6R6229	BTS-1000	Conv. Decoupling
R18	10KΩ	½	6R6320	BTS-10K	Osc. Grid
R19	1000Ω	½	6R6229	BTS-1000	Osc. Plate Decoupling
R20	5800Ω	½	6R6117		1st Video IF Grid
R21	82Ω	½	6R2035		1st Video IF Cathode
R22	220Ω	½	6R6270		1st Video IF Cathode See Note
R23	4.7 Meg.	½	6R6446	BTS-4.7 Meg.	Bias Network
R24	3.9 Meg.	½	6R490110	BTS-3.9 Meg.	Bias Network
R25	22KΩ	½	6R6397	BTS-22K	2nd Video IF Coil Shunt
R26	82Ω	½	6R2035		2nd Video IF Cathode
R27	100Ω	½	6R6328		2nd Video IF Decoupling
R28	3900Ω	½	6R5859	BTS-3900	3rd Video IF Coil Shunt
R29	100Ω	½	6R6328		Voltage Dropping
R30	82Ω	½	6R2035		3rd Video IF Cathode
R31	220Ω	½	6R6270		3rd Video IF Decoupling
R32	1.5 Meg.	½	6R6460	BTS-1.5 Meg.	Bias Network
R33	1 Meg.	½	6R6046	BTS-1 Meg.	Video Amp. Grid
R34	180Ω	½	6R5660		Voltage Divider
R35	6800Ω	2	6R5690	BT-2-6800	Video Amp. Plate
R36	4700Ω	2	6R5671	BT-2-4700	Video Amp. Decoupling
R37	470KΩ	½	6R6377	BTS-470K	Voltage Divider
R38	150Ω	½	6R6373		Sound IF Cathode
R39	1000Ω	½	6R6229	BTS-1000	Sound IF Decoupling
R40	180Ω	½	6R5660		Balancing
R41	33KΩ	½	6R6410	BTS-33K	De-emphasis
R42	6800Ω	½	6R6428	BTS-6800	Ratio Det. Diode Load
R43	6800Ω	½	6R6428	BTS-6800	Ratio Det. Diode Load
R44	4.7 Meg.	½	6R6446	BTS-4.7 Meg.	AF Grid
R45	220KΩ	½	6R6407	BTS-220K	AF Plate
R46	220KΩ	½	6R6407	BTS-220K	AF Plate Decoupling
R47	470KΩ	½	6R6377	BTS-470K	Output Grid
R48	330Ω	½	6R6023	BW-J-330	Output Cathode
R49	10KΩ	½	6R6320	BTS-10K	Isolation
R50	1 Meg.	½	6R6046	BTS-1 Meg.	Sync. Clipper Grid
R51	1 Meg.	½	6R6046	BTS-1 Meg.	Sync. Clipper Plate
R52	10KΩ	½	6R6320	BTS-10K	Sync. Clipper Grid
R53	6800Ω	1	6R6891	BTA-6800	Sync. Clipper Plate
R54	47KΩ	½	6R6048	BTS-47K	Integrator
R55	10KΩ	½	6R6320	BTS-10K	Vert. Amp. Grid
R56	100KΩ	½	6R6031	BTS-100K	Feedback
R57	3.3 Meg.	½	6R6497	BTS-3.3 Meg.	Vert. Osc. Grid
R58	2.2 Meg.	½	6R6433	BTS-2.2 Meg.	Vert. Osc. Plate
R59	22 Meg.	1	6R488252	BTA-22 Meg.	Voltage Divider
R60	10 Meg.	½	6R5622	BTS-10 Meg.	Vert. Amp. Grid
R61	6.8 Meg.	1	6R488157	BTA-6.8 Meg.	Vert. Amp. Plate
R62	10 Meg.	½	6R5622	BTS-10 Meg.	Vert. Amp. Grid
R63	6.8 Meg.	1	6R488157	BTA-6.8 Meg.	Vert. Amp. Plate
R64	100KΩ	½	6R6031	BTS-100K	Voltage Divider
R65	220KΩ	½	6R6407	BTS-220K	Voltage Divider
R66	15KΩ	½	6R6477	BTS-15K	Horiz. AFC Transformer Shunt
R67	8200Ω	½	6R5610	BTA-8200	Horiz. Osc. Grid
R68	4700Ω	½	6R6080	BTS-4700	Horiz. AFC Filter Network
R69	15KΩ	½	6R6477	BTS-15K	Horiz. Peaking
R70	3300Ω	½	6R5581	BTS-3300	Horiz. AFC Cathode

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R71	150KΩ	½	6R6398	BTS-150K	HV Osc. Grid
R72	100Ω	1	6R6415	BW-1-100	HV Osc. Cathode
R73	100Ω	1	6R6415	BW-1-100	HV Osc. Decoupling
R74	33Ω 5%	½	6R2036		Parasitic Supp.
R75	100KΩ	½	6R6031		HV Filter
R76	4.7 Meg.	½	6R6446		Horiz. Deflection Load
R77	4.7 Meg.	½	6R6446		Horiz. Deflection Load
R78	4.7 Meg.	½	6R6446		Vert. Deflection Load
R79	4.7 Meg.	½	6R6446		Vert. Deflection Load
R80	2.7 Meg.	1	6R488057		Voltage Divider
R81	2.7 Meg.	1	6R488057		Voltage Divider
R82	2.2 Meg.	1	6R2011		Voltage Divider
R83	2.2 Meg.	1	6R2011		Voltage Divider
R84	470KΩ	½	6R6377	BTS-470K	Isolation

Note. Not used in all models.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T1	59Ω	170Ω	24B480209				Hor. AFC Transformer
T2	59Ω	170Ω	24B480209				Hor. Block Osc. Trans.
T3A	270Ω		25B96138				Hor. Sweep Output
B	210Ω						

TRANSFORMER (H.V. OSC.)

ITEM No.	RATING	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T4	870Ω Tapped at 4.5Ω	0Ω		LX471212	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T5	2300Ω	3.5Ω	240Ω	.8Ω	25K470392	A-3876	A-2926	RO-2	

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	PM	3.5Ω	50B471322	ST-110 MOD. P6-V	6A15	
	CONE DIA.	V. C. DIA.				
SP2	5 7/8"	3/4"				

COILS (RF-IF)

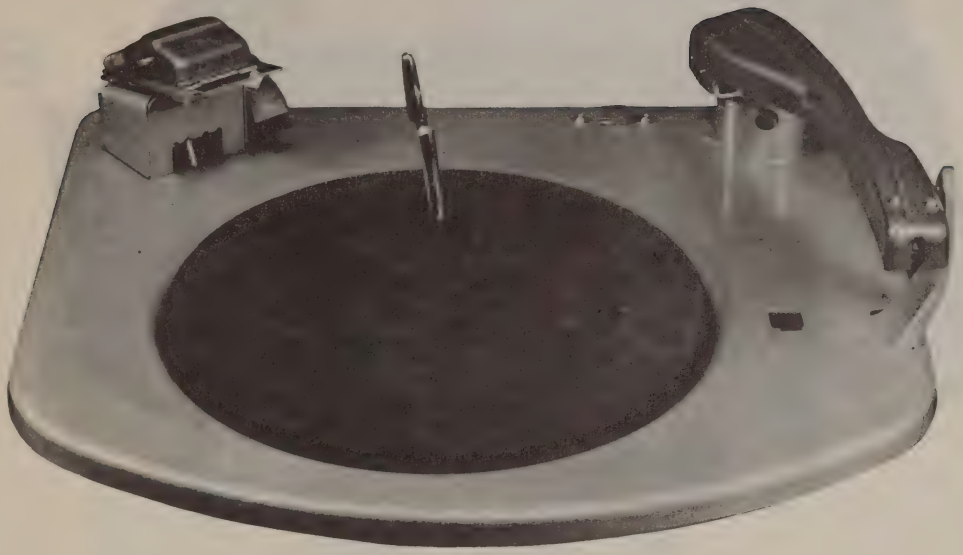
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: MEISSNER PART No.	NOTES
L1	Ant. Input			24A790033		
	Transformer	.1Ω				Part of channel selector switch
L2	RF Coils	0Ω				Part of channel selector switch
L3	RF Coils	0Ω				
L4	High Band					
	RF Coil	0Ω		24K790605		Straight, bare wire
L5	Osc. Coil	0Ω				Part of channel selector switch
L6	High Band					
	Osc.	0Ω		24K790604		
L7	RF Choke	2.2Ω		24K780128		2 microhenry
L8	RF Choke	.8Ω		24K780127		1 microhenry
L9	1st Video IF	0Ω	0Ω	24B90192		Less tuning cores
L10	RF Choke	6Ω		24K790035		5.6 microhenries
L11	2nd Video IF	.1Ω		24A790178		Less tuning core
L12	RF Choke	6Ω		24K790035		5.6 microhenries
L13	3rd Video IF	.1Ω		24A790176		Less tuning core
L14	Peaking	10.5Ω		24A780602		Wound on 18KΩ resistor, Green identification dot.
L15	Peaking	13Ω		24A780601		Black identification dot.
L16	Sound IF	1Ω		24A470159		Less tuning core
L17	Ratio Det.					
	Transformer	2.8Ω	.2Ω	24B790125		Complete with cores and capacitors. Less shield
L18	Fil. Choke	1Ω		24A780127		1 microhenry
L19	Fil. Choke	1Ω		24A780127		1 microhenry
L20	Fil. Choke	1Ω		24A780127		1 microhenry
L21	Fil. Choke	1Ω		24A780127		1 microhenry
L22	Fil. Choke	1Ω		24A780127		1 microhenry

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	MOTOROLA PART No.	SYLVANIA PART No.		
M1	.104A	48B470395	ND-5		
M2	.104A	48B470395	ND-5		

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Switch		Channel selector. Includes fine tuning trimmer and coils assy
M4A	4th Video IF Coil	24A790175	Less tuning core
B	RF Choke	24B790129	
C	RF Choke	24B790130	
D	Video Coupling	21K478234	8MMF, 500V
E	RF Bypass	21K478410	1000MMF, 500V
F	Video Det. Filter	21K470323	15MMF, 500V Video Detector Panel
G	Video Det. Load	6R2004	8.2KΩ
H	Video Det. Load	6R6022	330Ω
I	Video Detector	48A90173	1N34
M5	Ballast Tube	17A485459	
	Tuning Core	46A478242	Brass L11, L13, M4A
	Tuning Core	46A470310	Iron and Screw, L16, L9 Primary
	Tuning Core	46K480256	Iron and Screw. L9 Secondary
	Tuning Core	46A70023	Iron and Screw. L17 Primary
	Tuning Core	46A470302	Iron and Screw. L17 Secondary
	Terminal Strip	31A90167	Antenna
	Back Cover	1X790502	Includes line cord assy. Model 7VT1
	Back Cover	1X790581	Includes line cord assy. Model 7VT2
	Back Cover	1X790494	Includes line cord assy. Model 7VT5
	Cabinet	16F790428	Table model. Brown mahogany. Model 7VT1
	Cabinet	16K790429	Table model. Red mahogany. Model 7VT1R
	Cabinet	16K791108	Table model. Black, molded bakelite. Model 7VT2
	Cabinet	16E790106	Table Model. Walnut, molded bakelite. Model 7VT2W
	Cabinet	16K790632	Portable, red leatherette, Model 7VT5R
	Cabinet	16F790194	Portable, blonde leatherette, Model 7VT5B
	Escutcheon	13K791409	Includes grill, plastic, Model 7VT1
	Escutcheon	13D790192	Includes grill, plastic, Model 7VT5
	Handle	36K791475	Cabinet, plastic, rust color. Model 7VT5R
	Handle	36K790199	Cabinet, leather, tan color. Model 7VT5B
	Handle Loop	36K790198	Cabinet cover. brass, Model 7VT5
	Hinge	55K790401	Cabinet cover, complete, brass. Model 7VT5
	Knob	36K791438	Channel selector } Walnut-mahogany plastic Models 7VT1, 7VT1R, 7VT4R
	Knob	36K791441	Volume, contrast } Walnut-mahogany plastic Models 7VT1, 7VT1R, 7VT4R
	Knob	36K791436	Fine tuning } Walnut-mahogany plastic Models 7VT1, 7VT1R, 7VT4R
	Knob	36B790437	Channel selector } Gold plastic Models 7VT2, 7VT2W
	Knob	36K790427	Volume, contrast } Gold plastic Models 7VT2, 7VT2W
	Knob	36K790426	Fine tuning } Gold plastic Models 7VT2, 7VT2W
	Knob	36K791439	Channel Selector } Tan plastic Model 7VT5B
	Knob	36K791442	Volume, contrast } Tan plastic Model 7VT5B
	Knob	36K791437	Fine tuning, } Tan plastic Model 7VT5B
	Safety Glass	61C790434	Picture Tube window, plastic, Model 7VT2



TOP VIEW

GENERAL INFORMATION

The Model M-8 is a single-post, single-button control mechanism. It is designed to play and automatically change ten 12-inch or twelve 10-inch records, not intermixed, at a single loading. The last record will be repeated until the changer is turned off. A safety feature is employed in the pickup mechanism to prevent damage to the mechanism if, at any time, the arm is held during the change cycle. The changer operates on 117 volts AC, at 60 cycles. Non-standard and home recordings should be played in the "Manual" position.

Manufactured by PHILCO RADIO AND TELEVISION CORPORATION
PHILADELPHIA, PENNSYLVANIA

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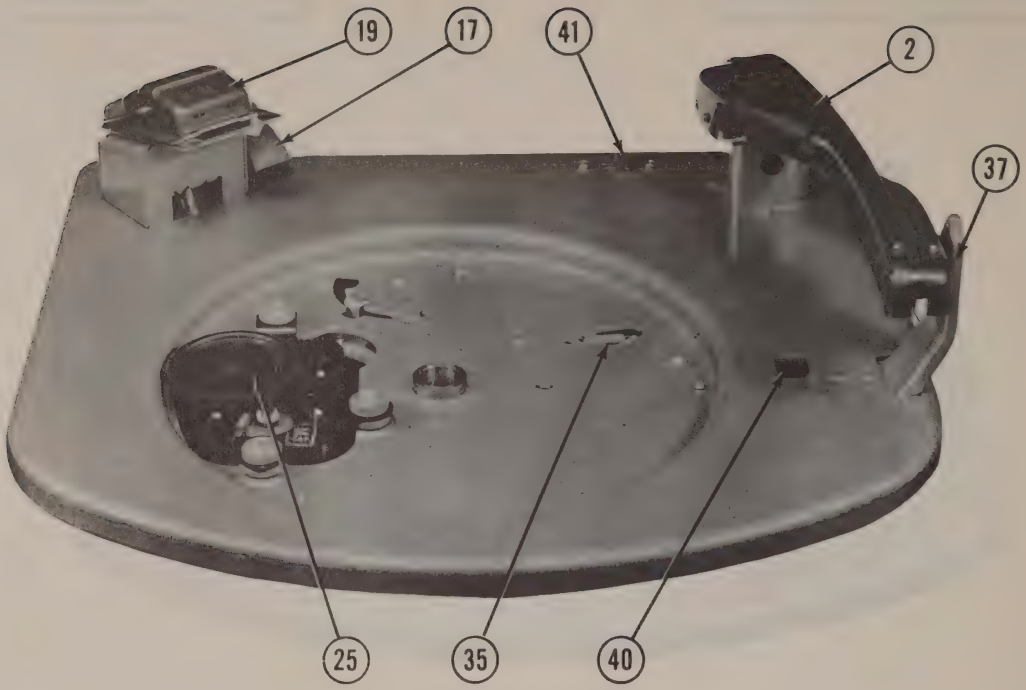
PHILCO
MODEL M-8

PHILCO
MODEL M-8



TOP VIEW LESS TURNTABLE

CHANGE CYCLE

As the pickup arm (2) rides into the eccentric groove of the record, its oscillation causes the trip finger (84) of the trip receiver (78) to push against the screw of the trip plate (72). This action moves the trip receiver from in front of the finger of the retractable segment (53A) of the cam gear (53), allowing the segment to mesh with turntable hub gear, which is in constant rotation with the turntable; thus, the change cycle is started.

As the cam gear rotates, cam surface (A) contacts and moves the pickup arm lift lever (56), which, in turn, pulls the short link (54), link spring (52), and the pullcord assembly (13); thus, the pickup arm is raised off the record. Cam surface (B) contacts and moves the pickup arm swing lever (55), which, through the linkage of the long link (42), the link spring (52), and the trip arm (51), swings the pickup arm out against the rubber grommet (36) of the arm rest (37).

Approximately at the same time roller (C) of the cam gear (53) contacts the push-off actuator (57), the cam surface (D) moves against the finger (E) of the selector hinge (44).

As the roller (C) moves the push-off actuator (57), the following connected parts 65, 62, 63, 64, 61, and 60 are actuated, thereby moving the push-off slide plate (20) forward, dropping a record to the turntable.

When the cam surface (D) contacts the finger (E) of the selector hinge (44), the selector hinge is pivoted forward causing the feeler (40) to be raised about the base plate (38). The movement of the feeler carries the 12-inch selector with it.

As the cam gear continues to rotate, the roller (C) moves away from the push-off actuator (57), thus returning the push-off mechanism to its original position.

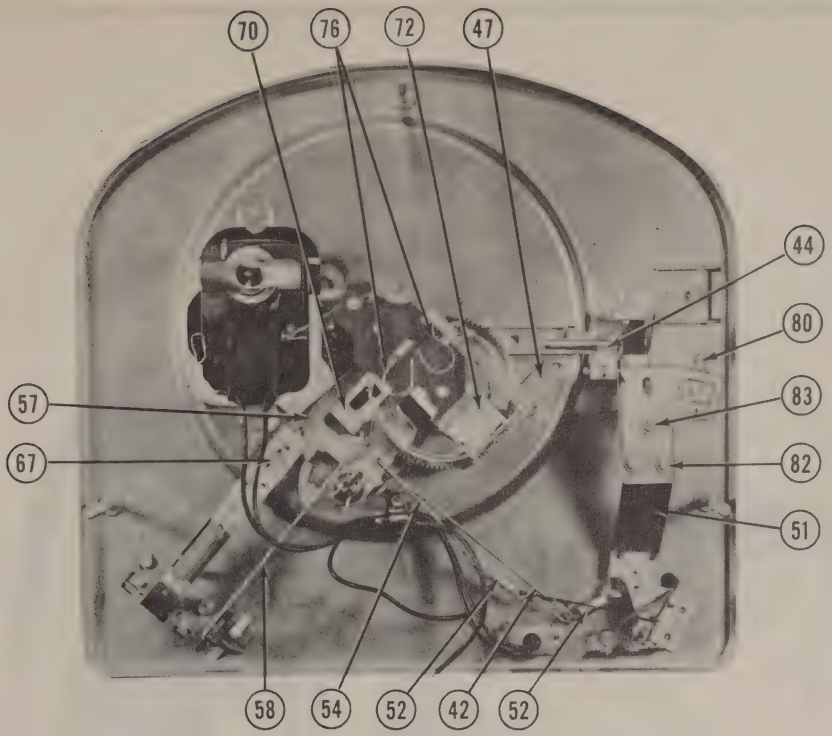
The swing lever (55), which is following the cam surface (B) of the cam gear, now swings the trip arm in, thereby moving the pickup arm in for positioning. For 10-inch positioning, the trip arm stop (80) moves against the finger (F) of the selector hinge (44), thus positioning the pickup arm for 10-inch position. With the presence of a 12-inch record on the turntable, the feeler (40) is depressed by the weight of the record. This allows the 12-inch selector (46) to fall in the path of the trip arm stop (80). As a result, the trip arm stop is moved against the finger (G) of the 12-inch selector, thereby stopping the pickup arm directly over the 12-inch set-down position.

The pickup arm lift lever (56), following surface (A) of the cam gear, now lowers the pickup to the starting groove of the record.

Finger (E) of the selector hinge (44) moves off the top surface (D) of the cam; as a result, the selector mechanism is pivoted from in front of the trip arm stop (80), thus giving the pickup arm free movement across the record.

The flange of the retractable segment (53A) moves against the flange of the trip plate (72), which moves the segment away from any contact with the turntable hub gear.

The cam (53) is now held in a disengaged position with the turntable hub gear, as roller (c) and the index lever (47) engage. This completes the change cycle.



BOTTOM VIEW

REJECT OPERATION

When the control button (17) is pushed in the direction of "Reject," the slide control bar (70) is pulled against the trip plate (72) by the control link (58), thus tripping the mechanism and starting the change cycle. A record, while playing, may be rejected at any time.

MANUAL OPERATION

When the control button is pushed to the "Manual" position, the slide control bar (70) is moved against a flange of the retractable segment (53A) of the gear cam (53), thereby preventing the mechanism from being tripped and the segment from engaging the turntable hub gear. Springs (76) return the reject mechanism to its normal position when the control button is moved to the "Reject" and released. They also snap and hold the slide control bar (70) in position when the control mechanism is in the "Manual" position.

ADJUSTMENTS

Pickup Arm Positioning

1. Place a 10-inch record on the turntable.
2. Push the control button to "Rej."
3. Rotate the turntable clockwise until the pickup arm is approximately ½" above the turntable.
4. Loosen the clamp screw (48) on the trip arm (51).
5. Hold the pickup arm ⅛" in from the edge of the record.
6. Set the trip arm (51) so that the trip (80) is in contact with the selector hinge finger (F).
7. Tighten the clamp screw, leaving a vertical clearance between the trip arm and base plate of 1/32".

This adjustment should be satisfactory for the 12-inch set-down position, although if this is not true, the adjustment can be made by slightly bending the 12-inch selector (46) to the right or left depending on the direction the pickup arm is to be moved.

Pickup Arm Height

With the changer out of cycle, place the arm next to the turntable. The needle point should clear the base plate by at least 1/16", and should not be any higher than the top of the turntable. To make the proper adjustment, bend the ear (H) of the pickup arm swivel (12) (bending the ear downward raises the pickup arm).

The maximum height of the pickup arm during the change cycle should be the clearance of from ⅛" to ¼" between the lower edge of the pickup arm and the top of the hook on the rest post; that is, when the arm, during cycle, is swung out against the rubber grommet of the arm rest. This may be adjusted by bending the ear (J) of the swivel (12) (bending the ear downward raises the pickup arm).

Pickup Arm Vertical and Horizontal

Before making these adjustments, make the "Pickup Arm Height Adjustment."

1. Make a mark on the turntable to coincide with one on the base plate.

A PHOTOFACT "EXPLODED" VIEW

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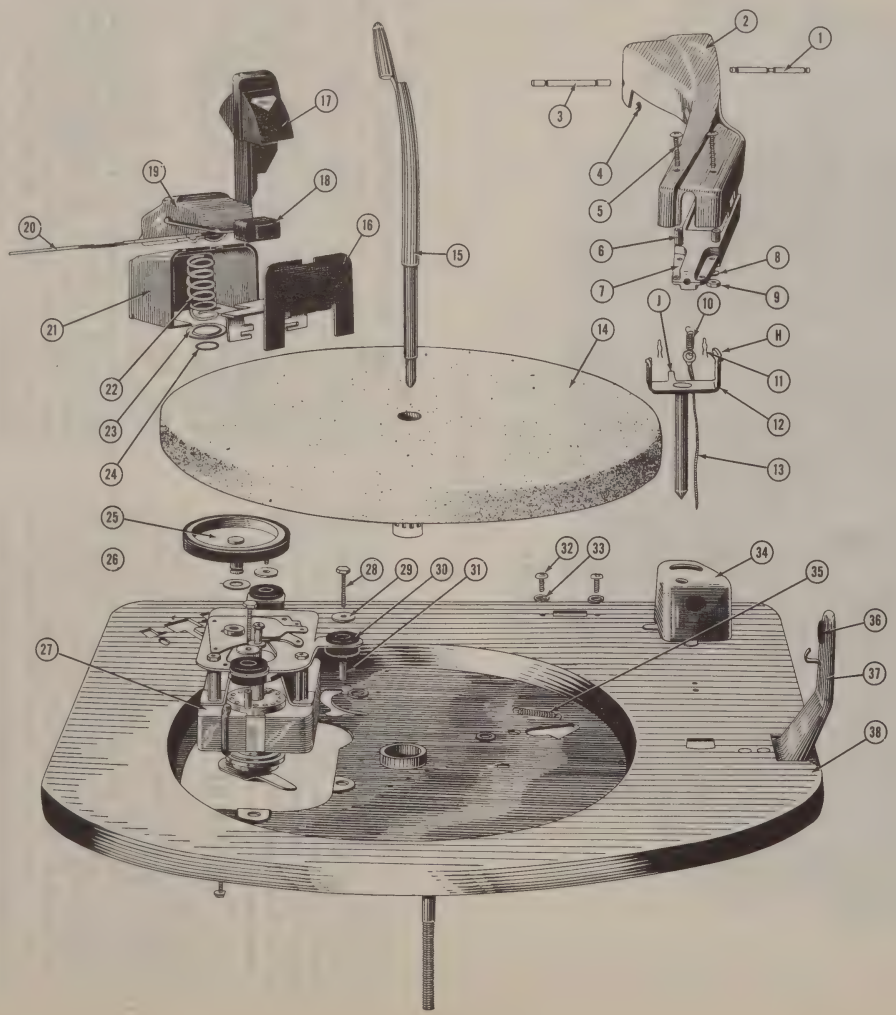

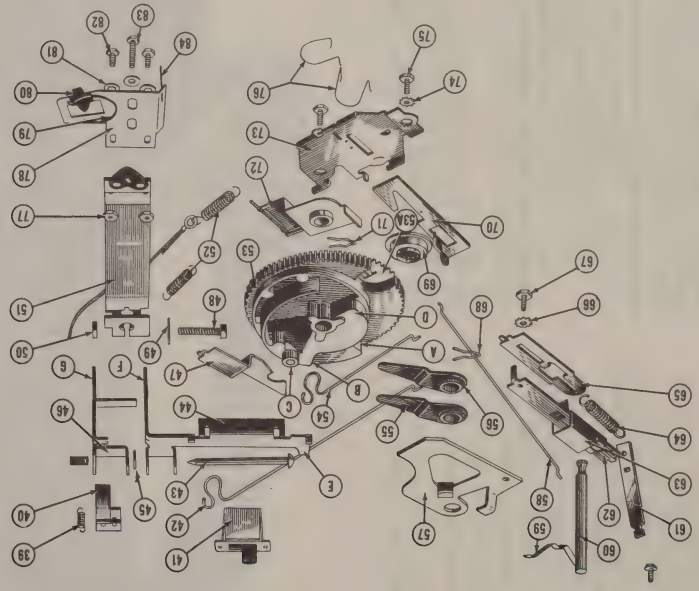
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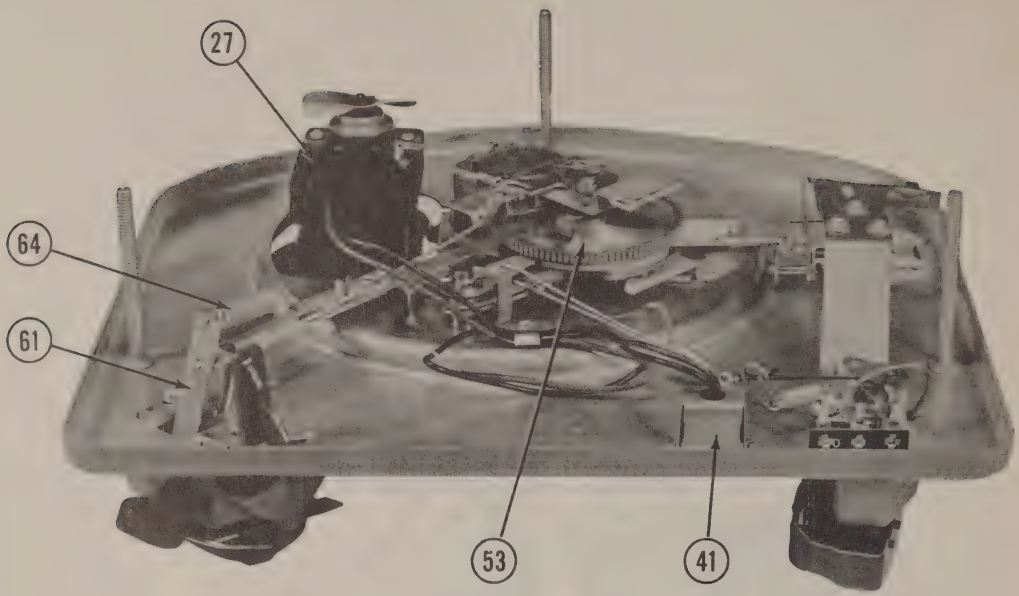


REAR VIEW—BOTTOM

2. Push the control button (17) to "Rej."

3. Rotate the turntable by hand ¾ of a revolution. At this point, the leading edge of the cam surface (A) is approximately ¼ inch from the end of the lift actuator (56).

4. Adjust the wire loop (54) by squeezing or opening the loop until the pickup arm lift pin (3) makes contact with the lower ear (J) of the swivel (12).

Trip Finger and Trip Receiver Adjustments

1. Place a record on the turntable.

2. Place the pickup arm on the record with the needle resting in the eccentric groove of the record.

3. The finger (84), which is in contact with ratchet screw on the trip plate (72), should be at an angle of from 25° to 30° with respect to the screw. For correct adjustment, adjust screw (83) on the trip receiver (78). Do not bend the trip finger to obtain correct angle.

4. To adjust the trip receiver, place the pickup arm on the record with the needle resting in the eccentric groove of the record.

5. To adjust the trip receiver (78) so the center line of the ratchet screw and the trip finger coincide, loosen the set screws (82) slightly and move the trip receivers to obtain the correct adjustment.

6. The trip arm stop (80) should engage the selector (46) for 12-inch records, or selector (44) for 10-inch records, approximately ⅛ inch. Loosen the two screws (82) and pivot the trip receiver to obtain the correct adjustment.

These adjustments (the trip arm stop and centering of the trip finger and ratchet screw) will affect each other slightly; therefore, it may be necessary to repeat each adjustment until both are correct.

After making the above adjustments, it will be necessary to correct the *"pickup arm positioning."*

Record Shelf Adjustments

1. Loosen the two hex head screws which hold the record shelf assembly to the base plate.

2. Place the Philco record shelf gauge (45-1470) (also used for M-4) over the spindle and on to the record shelf.

3. Adjust the record shelf assembly until the large curved part of the gauge drops even with the record shelf lips.

4. Push the record shelf and gauge lightly against the spindle; keep the lips of the record shelf in contact with the gauge.

5. Tighten the hex head screws.

Push-Off Adjustment

1. Push control button (17) to "Rej."

2. Rotate turntable 2½ revolutions, by hand. At this point, the push-off actuator (57) is moved by roller (C) to its most forward position.

3. Loosen the bar locking screw (67).

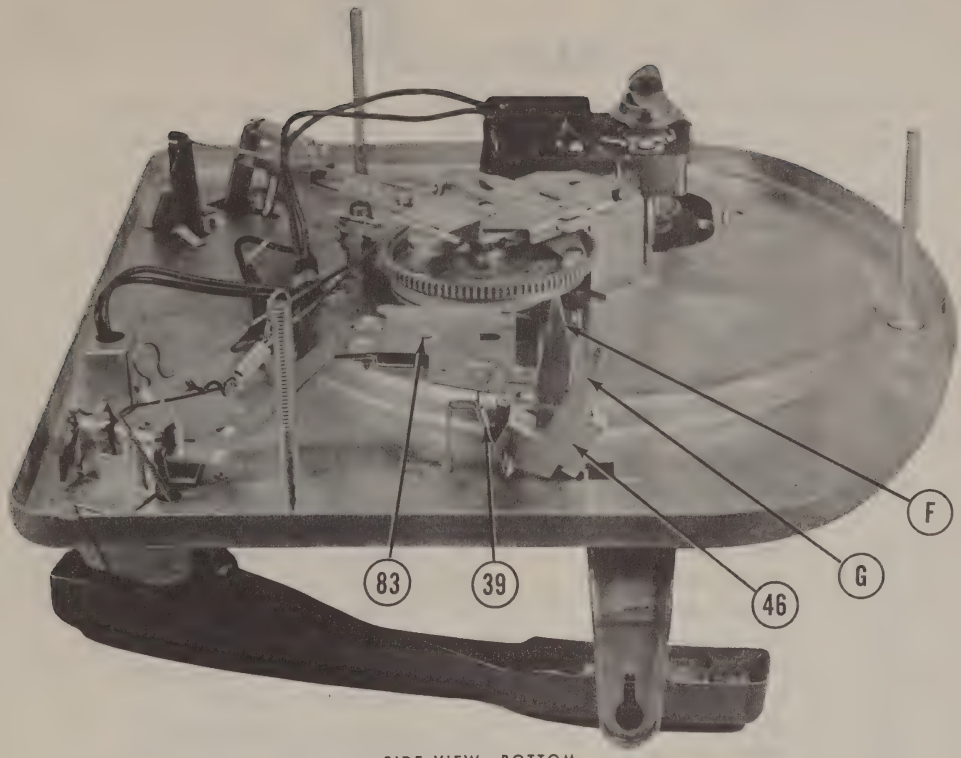
4. Squeeze the push-off bar ears toward each other to the place where the push-off slide plate (20) extends 1/32" beyond the lips of the shelf.

5. Tighten the locking screw.

TROUBLES

Mechanism Does Not Stay in "Manual Position"

1. Spring (76) weak or missing.



SIDE VIEW—BOTTOM

Changer Trips Continually

1. Spring (76) missing.

Changer Fails to Trip

1. Spring that actuates retractable segment (53A) missing.

Pickup Arm Does Not Set Down for 10-Inch Record

1. Spring (39) missing or loose, thereby allowing the 12-inch selector (46) to lie in the path of the trip arm stop (80).

Pickup Arm Does Not Set Down for 12-Inch Record

1. Spring (39) too strong; as a result the feeler will not be actuated when a 12-inch record is dropped on it.

LUBRICATION

The M-8 record changer has been lubricated at the factory; further lubrication is not necessary. However, after a long period of time, or due to excessive use, or whenever a major part or assembly is to be replaced, the changer should be cleaned with carbon tetrachloride to remove all old grease, oil, and dirt.

Apply lubrication as follows:

The following parts are to be lubricated with a grease having the consistency of vaseline:

1. The push-off slide plate (20).
2. The slider control bar (70).
3. The cam gear teeth (53), cam surfaces (A, B, and D), and cam gear spindle.
4. The trip plate ear where contact is made with gear segment.
5. Actuator stud.
6. All parts with ears sliding on changer base plate.
7. Index lever (47) which slides on the base plate.
8. Ears of the push-off actuator (57) which slides on top of the base plate.
9. Upper bearing surface of the turntable shaft.
10. The shaft of the pickup arm shaft and swivel (12).

The following parts are to be lubricated with S.A.E. 20 oil:

1. Apply one drop of oil to the pickup arm where the pivot pin rides.
2. Motor bearings.
3. Motor idler plate.
4. Trip plate bushing (72).
5. Cam gear roller (C).

Do not lubricate or allow oil or grease to contact the following:

1. The trip finger (84).
2. The ratchet screw on the trip plate (72).
3. Selector (44) and (46).
4. Retractable gear segment (53A).
5. Motor shaft.
6. Idler wheel tire.

If any grease or oil should come in contact with these parts, remove the oil or grease immediately with carbon tetrachloride.

PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	56-4604FE15	Pickup arm pivot pin
2	35-2664FC55	Pickup arm shell
3	56-4631	Pickup arm lift pin
4		Retaining clip
5		3-48 x ⅜ cartridge mounting screws
6	56-4601-1	Long spacer
	56-4601	Short spacer
7	35-2643	Crystal pickup cartridge
8		Lockwasher
9		3-48 hex nuts
10	56-4603FA38	Pickup arm bias spring
11		Hairpin clip
12	76-2983	Shaft and Swivel
13	76-2982	Pull-cord assembly
14	35-3066	Turntable assembly
15	56-4587FA8	Spindle
16	56-4593	Fulcrum Plate
17	54-4479	Control button
18	54-4460	Bumper
19	76-2984	Push-off cover assembly
20	56-4594FA37	Push-off slide plate
21	56-4629	Push-off saddle
22	56-4630FA38	Shelf spring
23	56-4627FA3	Retainer spring
24	56-4628FA38	Spring ring
25	76-2374	Idler wheel
26		Fiber washer
27	35-1332	Motor
28		Motor mounting screws 6-32 x ⅝
29		Flat washer
30	54-4491	Motor mounting grommets
31	56-4926	Motor mounting spacers
32		Switch mounting screws 4-40 x ¼
33		Lockwashers
34		Pickup arm pivot housing (part of 38)
35		Index lever spring
36		Grommet
37		Pickup arm rest (part of 38)
38		Base plate
39	56-4670FA38	Feeler spring
40	56-4616FE15	Feeler
41	42-1750-3	Switch
	56-1880	Switch cover
42	56-4606FA3	Long link
43	1W36521	Escutcheon pin

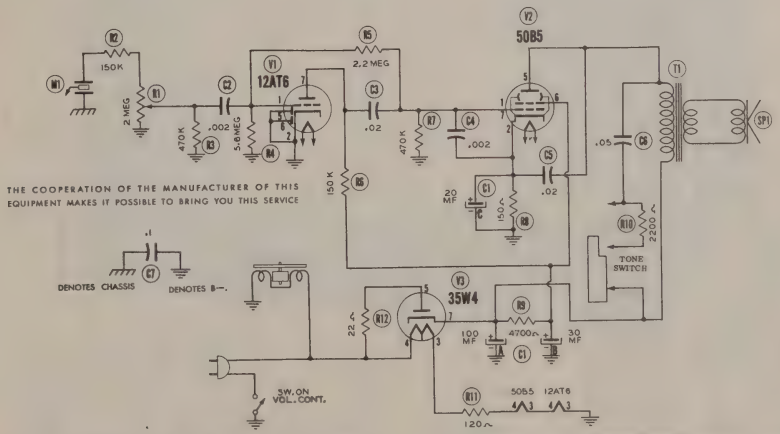
Ref. No.	Part No	DESCRIPTION
44	56-4617FA3	Selector hinge
45	2W53954	Washer
46	56-4618	12-inch selector
47	56-4585FA3	Index lever
48		Clamp screw 10-32 x 1
49		Flat washer
50		Clamp screw nut 10-32
51	76-3065	Trip arm
52	56-4608FA38	Link spring
53	76-2989	Cam-gear assembly
53A		Retractable segment (part of 53)
54	56-4607FA3	Short link
55	76-2987	Pickup arm swing lever
56	76-2987	Pickup arm lift lever
57	56-4588FA3	Push-off actuator
58	56-4589FA3	Control link
59	56-4778FA38	Control button spring
60	56-4595FA3	Push-off rod
61	56-4596FA3	Push-off hanger
62	56-4597FA3	Push-off bar
63	56-4599FA3	Safety slider
64	56-4600FA38	Return spring
65	56-4774FA3	Rear push-off bar
66		Lockwasher
67		Screw 6-32 x ¼
68	1W42706FA1	Hairpin clip
69	76-2991	Ball bearing assembly
70		Slider control bar (part of bridge assembly)
	76-2978	Bridge assembly
71	1W42706FA1	Hairpin clip
72	76-2990	Trip plate
73		Bridge plate (part of bridge assembly)
74		Lockwasher
75		Mounting screw 6-32 x ¼
76		Wire springs (part of bridge assembly)
77		Mounting nuts (4-40)
78	56-4615	Trip receiver
79	56-4613FA38	Stop spring
80	56-46114	Trip arm stop
81		Flat washers
82		Mounting screws 4-40 x 5/16
83		Adjusting screw 4-40 x 7/16
84		Trip finger

PHONOLA
MODEL TK-134

PHONOLA MODEL TK-134

TRADE NAME	Phonola, Model TK-134
MANUFACTURER	Waters-Conley Co., Rochester, Minnesota
TYPE SET	AC Operated Phono Player with 3 Tube Amplifier
TUBES (THREE)	Types 12AT6 AF Amp., 50B5 Power Output, 35W4 Rectifier

POWER SUPPLY 110-120 Volts AC RATING: .25 Amp. at 117 Volts AC



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12AT6	0V.	0V.	0V.	12VAC	0V.	0V.	55VDC
V 2	50B5	0V.	7.2VDC	12VAC	65VAC	125VDC	115VDC	0V.
V 3	35W4	0V.	0V.	82VAC	117VAC	115VAC	110VAC	133VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12AT6	1.7 Meg	0Ω	0Ω	13Ω	0Ω	0Ω	†150KΩ
V 2	50B5	470KΩ	150Ω	12Ω	44Ω	†160Ω	†4.7KΩ	470KΩ
V 3	35W4	Inf	Inf	40Ω	24Ω	48Ω	30Ω	130KΩ

† Measured from pin 7 of V3.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHONOLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	AF Amp.	12AT6	12AT6	7BT	
V2	Power Output	50B5	50B5	7BZ	
V3	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHONOLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	100	150		PRSA1684D	EDL8415C		TA-309 *	Filter Blue
B	30	150					UT-301	Filter Red
C	20	25						Output Plate Bypass Yellow
C2	.002	600		P688-002	PTE6D2	GP 2M-002	TM-22	Audio Coupling
C3	.02	400		P488-02	PTE4S2		TM-12	Audio Coupling
C4	.002	600		P688-002	PTE6D2	GP2M-002	TM-22	Output Grid Bypass
C5	.02	400		P488-02	PTE4S2		TM-12	Output Plate Bypass
C6	.05	400		P488-05	PTE4S5		TM-15	Tone Compensation
C7	.1	400		P488-1	PPE4P1		TM-1	Line Isolation

* Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHONOLA PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	2 Meg.	½		Q13-139	M-66-Z	Volume control
B	Shaft			PQ	Not Req.	Attach to R1A per instructions.
C	Switch			76-1	SW-A	Attach to R1A per instructions.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHONOLA PART No.	IRC PART No.	IDENTIFICATION CODES
R2	150KΩ	½		BTS-150K	Series Phono Pickup
R3	470KΩ	½		BTS-470K	Tone Compensation
R4	5.6 Meg.	½		BTS-5.6 Meg.	AF Grid
R5	2.2 Meg.	½		BTS-2.2 Meg.	Feedback
R6	150KΩ	½		BTS-150K	AF Plate
R7	470KΩ	½		BTS-470K	Output Grid
R8	150Ω	1		BW-1-150	Output Cathode
R9	4700Ω	½		BTS-4700	Filter
R10	2200Ω	½		BTS-2200	Tone Compensation
R11	120Ω	2		BW-2-120	Filament Dropping, Wire Wound
R12	22Ω	½			Rect. Ballast

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: PHONOLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	2.2KΩ	3.4Ω	170Ω	.4Ω		A-3332	A-3025	RO-2 †	† Drill one new mounting hole.

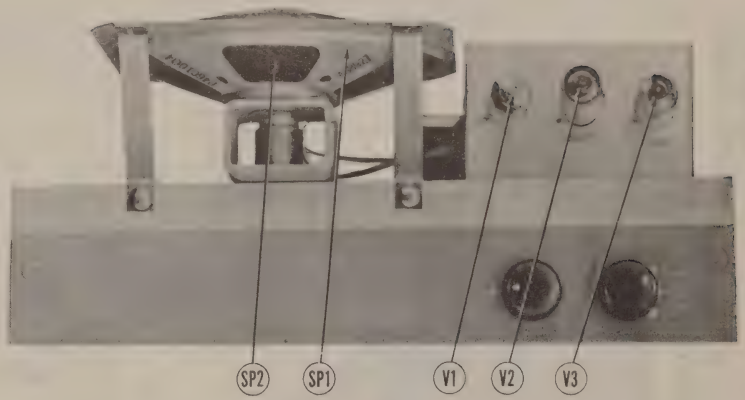
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: PHONOLA PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.				
SP1	PM	3.4Ω			46A1	
	CONE DIA.	V. C. DIA.				
SP2	3 7/8" x 5 1/8"	9/16"				

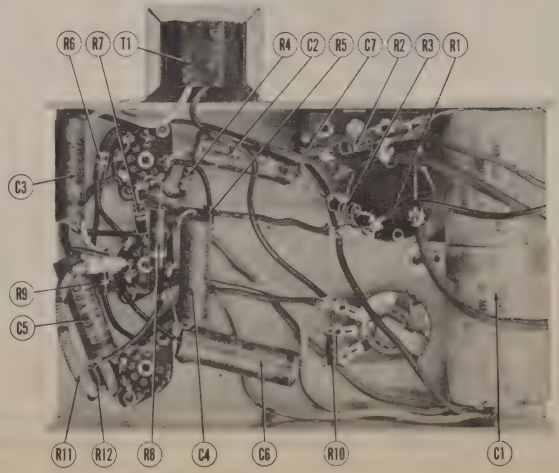
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: PHONOLA PART No.	ASTATIC PART No.	REMARKS
M1		LQD-1J	

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



PHOTOFACT* Folder

REGAL MODELS
1007, 1207, 1208, 1607

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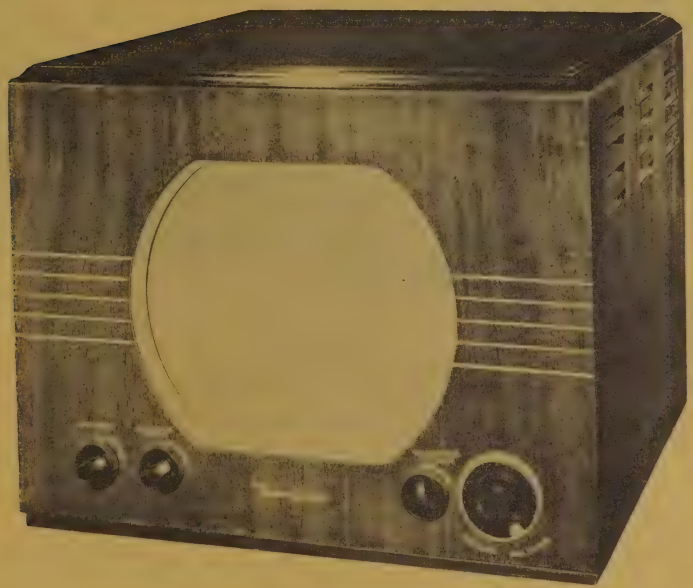

MODEL 1207

REGAL MODELS
1007, 1207, 1208, 1607

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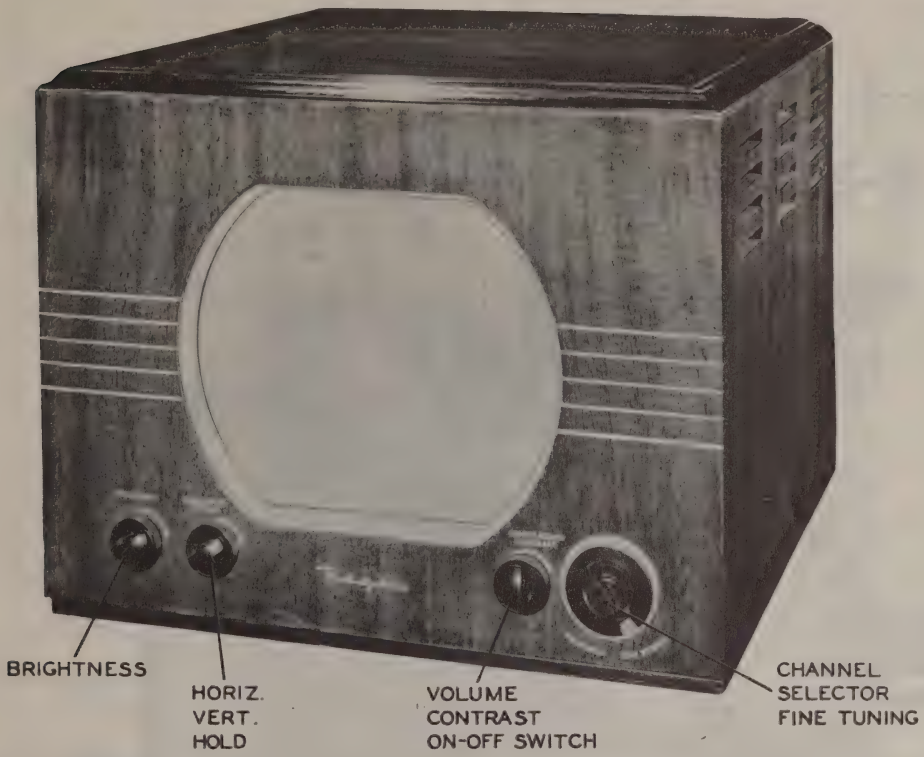

REGAL
MODELS 1007, 1207, 1208, 1607

REGAL MODEL 1207

TRADE NAME	Regal Models 1007, 1207, 1208, 1607
MANUFACTURER	Regal Electronics Corp., 605 W. 130th Street, New York, New York.
TYPE SET	Television Receiver
TUBES	Twenty
POWER SUPPLY	110 - 120 Volts AC - 60 Cycle — RATING 1.54 Amp. at 117 Volts AC
TUNING RANGE—	Channels 2 thru 13.

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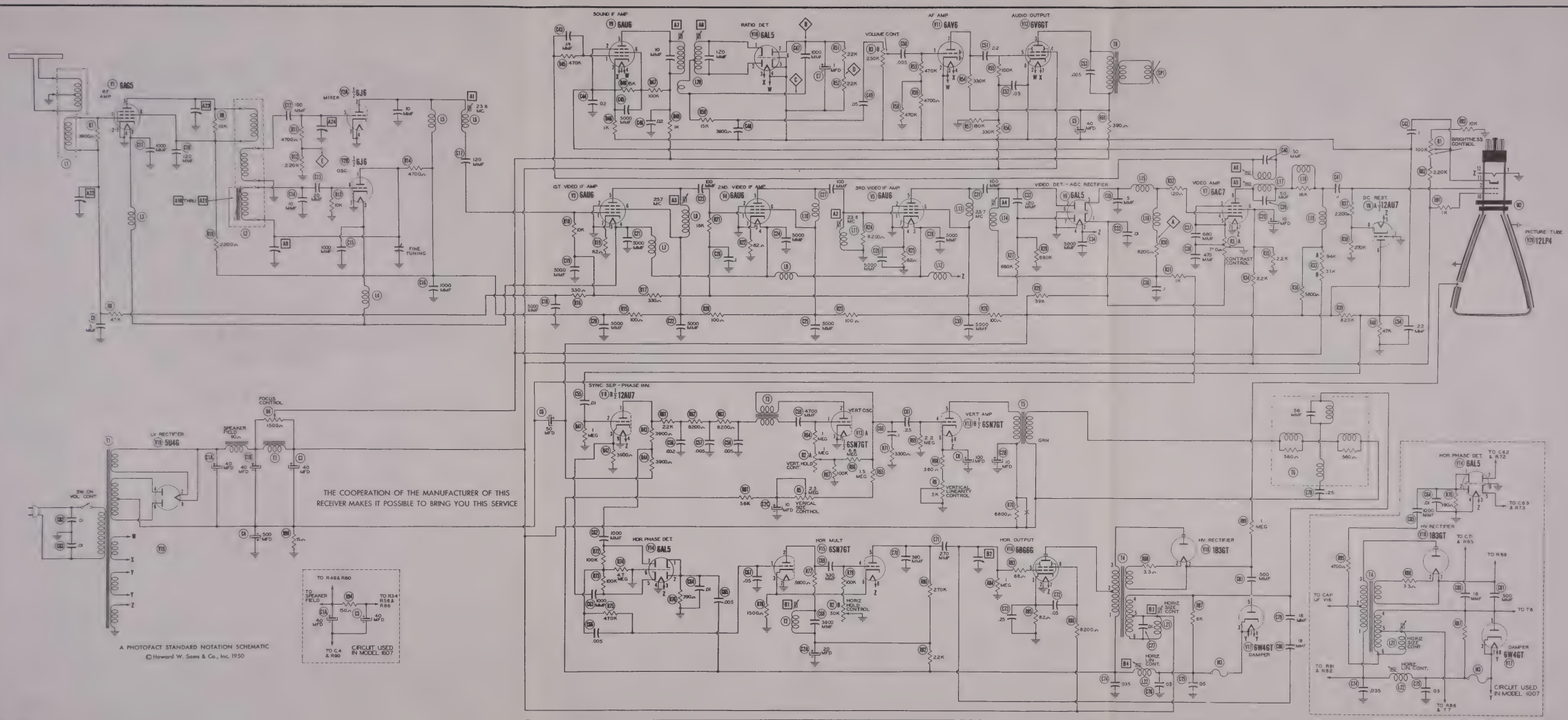
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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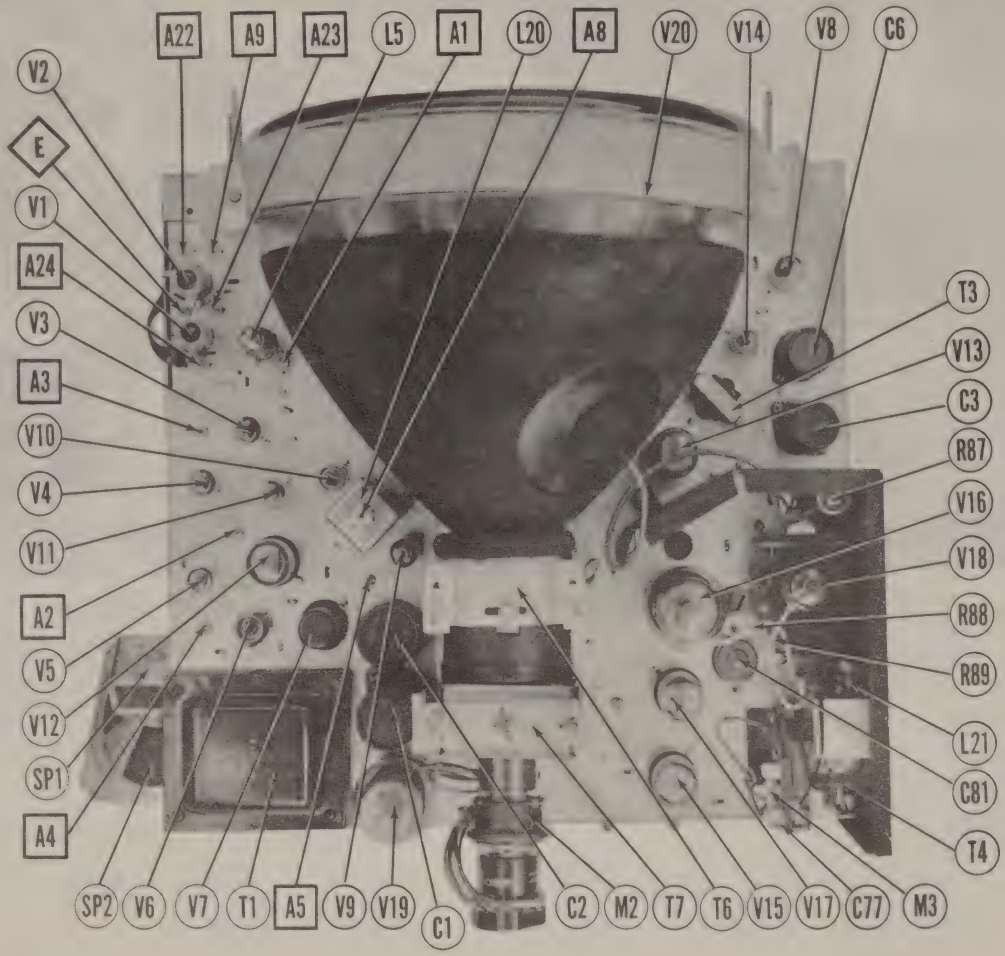
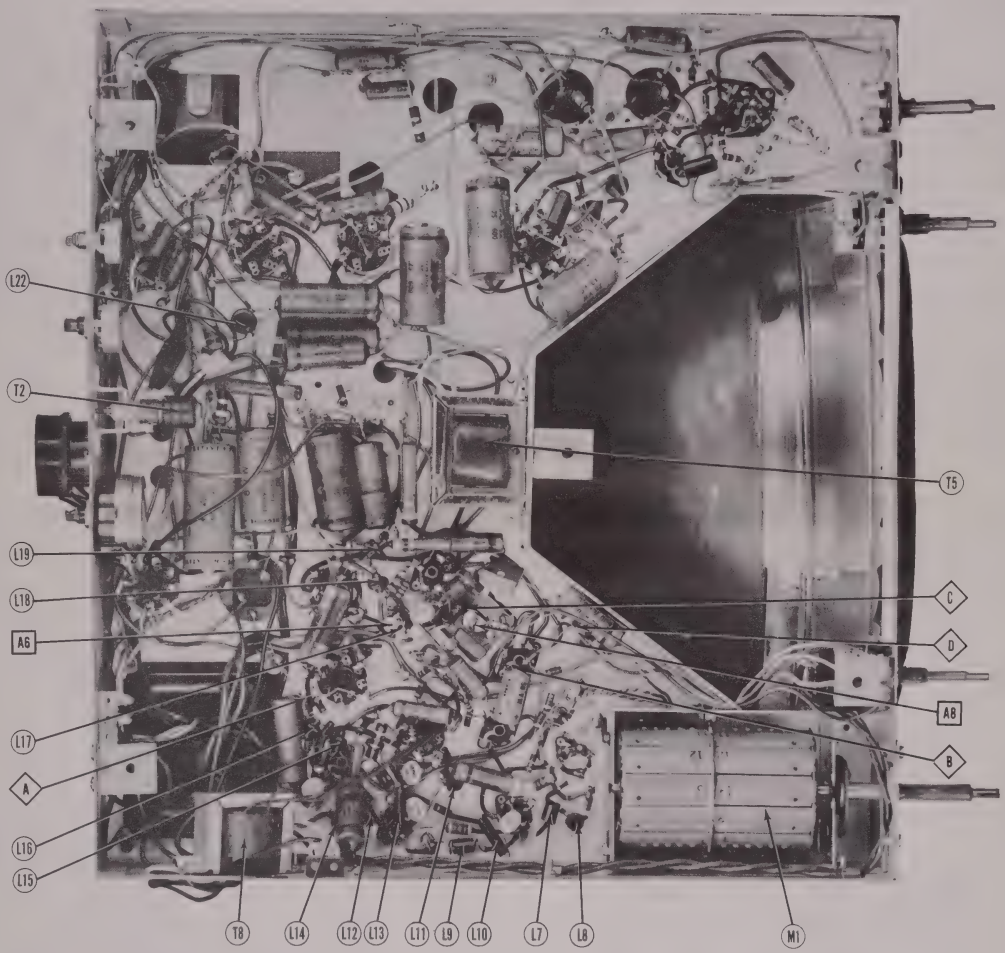
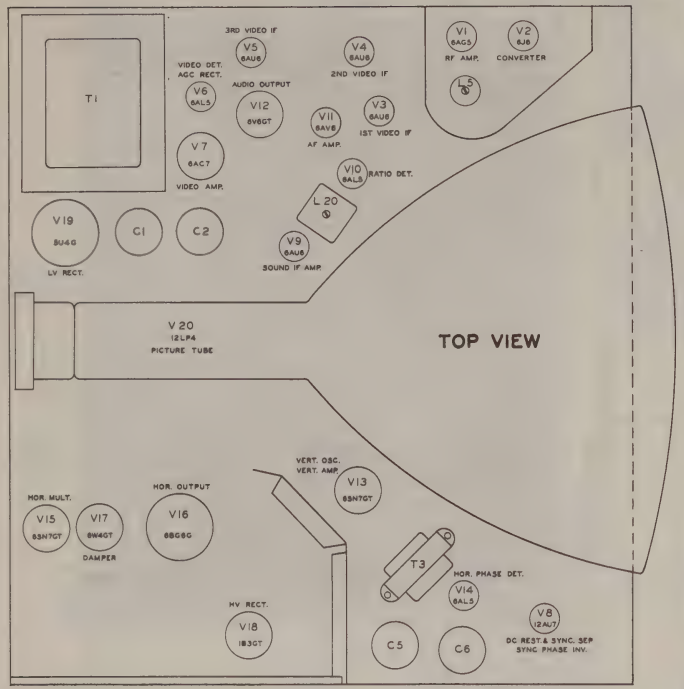
CIRCUIT USED IN MODEL 1007
CIRCUIT USED IN MODEL 1007
SOUND IF AMP
RATIO DET.
VOLUME CONT
AF AMP
AUDIO OUTPUT
RF AMP
MIXER
OSC
FINE TUNING
1ST VIDEO IF AMP
2ND VIDEO IF AMP
3RD VIDEO IF AMP
VIDEO DET. - AGC RECTIFIER
VIDEO AMP
DC REST
BRIGHTNESS CONTROL
CONTRAST CONTROL
PICTURE TUBE
SYNC SEP - PHASE INV.
VERT OSC
VERT AMP
VERTICAL LINEARITY CONTROL
VERTICAL SIZE CONTROL
VERT HOLD CONT.
HOR PHASE DET.
HOR MULT
HORIZ HOLD CONTROL
HOR OUTPUT
HORIZ SIZE CONT
HORIZ LIN. CONT.
HV RECTIFIER
DAMPER
LV RECTIFIER
SPEAKER FIELD
FOCUS CONTROL
SW. ON VOL. CONT
TO SPEAKER FIELD
TO R49 & R80
TO R34 R36 & R86
TO C4 & R80

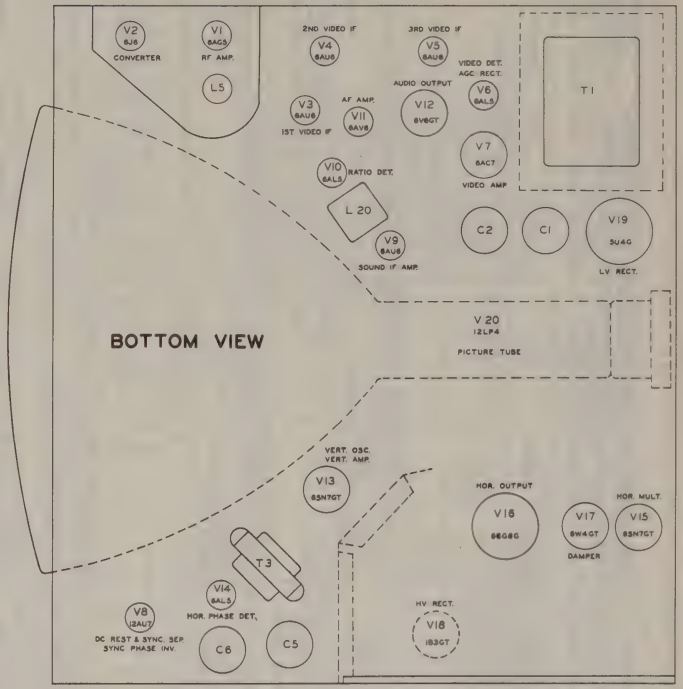


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

REGAL MODELS
1007, 1207, 1208,1607

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If receiver is to be aligned with the picture tube removed, remove the horizontal oscillator tube (V15) to prevent high voltage shock hazard.

VIDEO IF ALIGNMENT

Remove the channel 13 segment from the converter section of the tuner turret. Turn the channel selector switch to channel 13, thereby disabling the local oscillator.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over converter tube (V2). Low side to chassis.	23.6MC (Unmod.)	13 (See note above)	DC Probe and common leads across R30.	A1, A2	Adjust for maximum deflection.
2.	Direct	"	25.7MC (Unmod.)	"	"	A3, A4	Adjust for maximum deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to ungrounded tube shield floating over converter tube (V2). Low side to chassis.	24.5MC (10MC SWP)	23.6MC 25.7MC	Any	Vert. Amp. to Point (A) Low side to chassis.		Check for response curve similar to Fig 1 with markers as shown. If necessary retouch A1 thru A4 for optimum response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Do not ground or touch the case of the VTVM as both leads are at approximately 140. volts positive with respect to the receiver chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (B) Common to pin 5 of 6AL5-V10.	A5, A6, A7	Adjust for maximum deflection.
5.	.01MFD	"	"	"	DC Probe to Point (C) Common to Point (D)	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ~ modulation and 450KC sweep. Use 120 ~ sawtooth voltage in scope for horizontal deflection.
Do not connect the sweep output from the signal generator to the scope.
The scope chassis ais at approximately 140 volts positive with respect to the receiver chassis.
Avoid grounding or touching the scope chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B) Low side to pin 5 of 6AL5 (V10).	A5, A6, A7	Disconnect stabilizer capacitor C7. Adjust for maximum amplitude and symmetry as as per Fig 2.
7.	.01MFD	"	"	"	"	Vert. Amp. to Point (C) Low side to pin 5 of 6AL5 (V10).	A8, A7	Reconnect capacitor C7. Adjust A8 so 4.5MC occurs at center of crossover lines as per Fig 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Set the fine tuning control to the mid-position of its range.
Replace the channel 13 segment of the tuner turret.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A9. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A9 will not bring all channels within the range of the fine tuning control, it will be necessary to use the individual channel oscillator adjustment for each channel that is off frequency (steps 8 and 9).
The individual channel oscillator adjustment screws are reached through a hold just to the right of the channel switch shaft. The correct adjustment screw is accessible thru this hole as the channel switch is turned to each channel.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A) Low side to chassis.	A10	Adjust for response curve similar to Fig. 4 with markers as shown.
9.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"	A11	Check all channels for response curve similar to Fig 4. On any channel that markers do not appear in the proper position adjust the oscillator screw for that channel until correct response is obtained.
			201MC (10MC SWP)	199.25MC 203.75MC	11		A12	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A13	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A14	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A15	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A16	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A17	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A18	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A19	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A20	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A21	

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

The RF and mixer circuits are pre-set at the factory, and are normally very stable. Alignment of these circuits should not be attempted unless they are definitely known to be out of alignment.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to Ⓔ Low side to chassis.	A22, A23 A24	Adjust for flat top response with marker as shown in Fig 5.
11.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all other channels for response similar to Fig 5 with correct marker placement. If optimum response is desired on any channel, make slight adjustments of A22, A23 and A24 with channel switch on that channel. Recheck all channels to see that they have not been seriously affected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189 MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

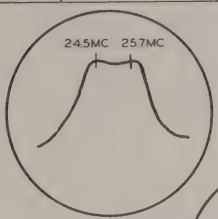


FIG. 1

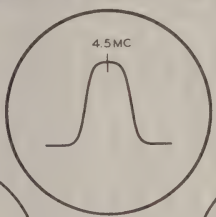


FIG. 2

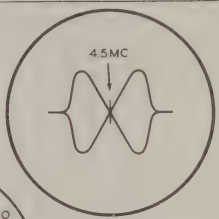


FIG. 3

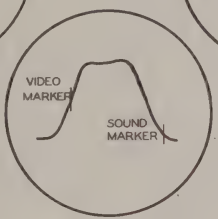


FIG. 4

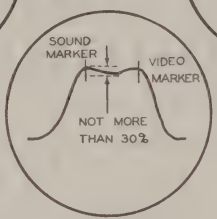
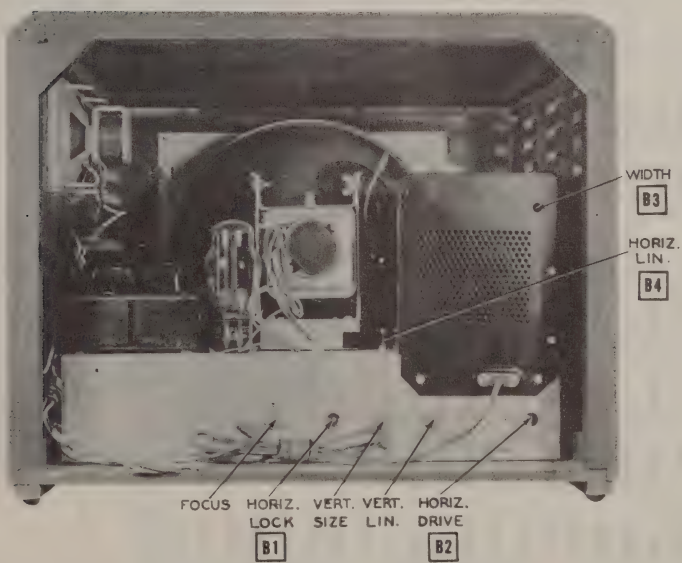


FIG. 5



CABINET – REAR VIEW

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.2VDC	0V	6.3VAC	0V	100VDC	100VDC	0V		
V 2	6J6	70VDC	125VDC	6.3VAC	0V	-1.1VDC	§-3VDC	0V		
V 3	6AU6	-1.8VDC	0V	0V	6.3VAC	127VDC	127VDC	.7VDC		
V 4	6AU6	-.2VDC	0V	0V	6.3VAC	127VDC	127VDC	.7VDC		
V 5	6AU6	0V	0V	6.3VAC	0V	130VDC	130VDC	1VDC		
V 6	6AL5	0V	-2.4VDC	6.3VAC	0V	-.4VDC	0V	-2.2VDC		
V 7	6AC7	0V	0V	1.3VDC	-1.4VDC	1.3VDC	175VDC	6.3VAC	165VDC	
V 8	12AU7	125VDC	0V	6VDC	6.3VAC	6.3VAC	5.7VDC	0V	1.1VDC	0V
V 9	6AU6	#.6VDC	#2.8VDC	#6.3VAC	#0V	#200VDC	#25VDC	#2.8VDC		
V 10	6AL5	#-.4VDC	#-.4VDC	#6.3VAC	#0V	#0V	#0V	#-.7VDC		
V 11	6AV6	#-.6VDC	#0V	#0V	#6.3VAC	0V	0V	#125VDC		
V 12	6V6GT	0V	#0V	#175VDC	#205VDC	#-9VDC	#-9.8VDC	#6.3VAC	#0V	
V 13	6SN7GT	-22VDC	77VDC	0V	0V	300VDC	9VDC 17VDC	0V	6.3VAC	
V 14	6AL5	0V	0V	6.3VAC	0V	3.6VDC	0V	-3.3VDC		
V 15	6SN7GT	0V	250VDC	9.8VDC	-3.9VDC	100VDC	9.8VDC	0V	6.3VAC	
V 16	6BG6G	-1.1VDC	0V	8.4VDC	0V	-1.1VDC	0V	6.3VAC	250VDC	TOP CAP *
V 17	6W4GT	0V	0V	400VDC	400VDC	335VDC	335VDC	400VDC	400VDC	
V 18	1B3GT	* DO NOT MEASURE								
V 19	5U4G	0V	390VDC	335VDC	390VAC	135VDC	390VAC	330VDC	390VDC	
V 20	12LP4	0V	1.1VDC	PIN 10 335VDC	PIN 11 125VDC	PIN 12 6.3VAC				

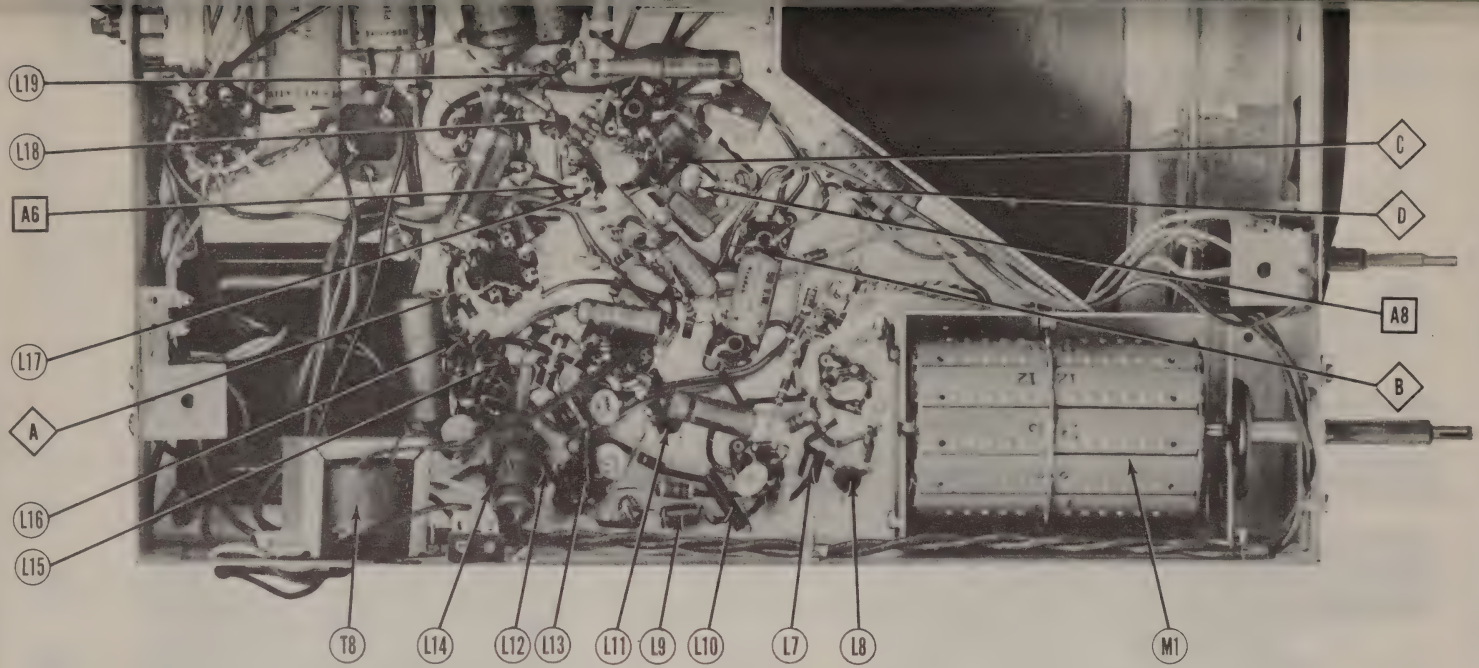
§ TAKEN WITH VACUUM TUBE VOLTMETER
# MEASURED FROM PIN 8 OF V12
* DO NOT MEASURE

RESISTANCE READINGS

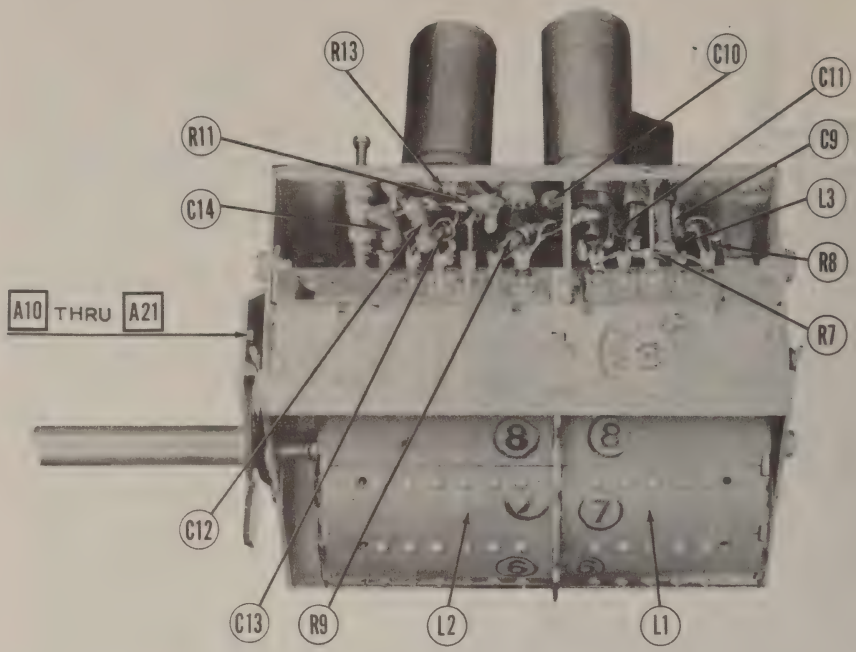
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	1.5 Meg.	0Ω	.1Ω	0Ω	#2.5KΩ	#2.5KΩ	0Ω		
V 2	6J6	#5KΩ	#400Ω	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6AU6	1.5 Meg.	0Ω	0Ω	.1Ω	#300Ω	#300Ω	82Ω		
V 4	6AU6	1.5 Meg.	0Ω	0Ω	.1Ω	#200Ω	#200Ω	82Ω		
V 5	6AU6	.1Ω	0Ω	.1Ω	0Ω	#100Ω	#100Ω	82Ω		
V 6	6AL5	.5Ω	1000Ω	.1Ω	0Ω	9.2KΩ	0Ω	680KΩ		
V 7	6AC7	0Ω	0Ω	750Ω	10KΩ	750Ω	†17KΩ	.1Ω	#5.5KΩ	
V 8	12AU7	#7.5KΩ	1 Meg.	4KΩ	.1Ω	.1Ω	47KΩ	0Ω	#70KΩ	0Ω
V 9	6AU6	#470KΩ	#1000Ω	#.1Ω	#0Ω	†1.5KΩ	#15KΩ	#1000Ω		
V 10	6AL5	# Inf.	# Inf.	#.1Ω	#0Ω	#0Ω	#0Ω	#44KΩ		
V 11	6AV6	#470KΩ	#0Ω	#0Ω	#.1Ω	Inf.	Inf.	†330KΩ		
V 12	6V6GT	0Ω	#0Ω	†1.2KΩ	†300Ω	250KΩ	120KΩ	#.1Ω	#0Ω	
V 13	6SN7GT	2 Meg.	†2.5Meg.	0Ω	2.2 Meg.	†1.7KΩ	550Ω 5.5KΩ	0Ω	.1Ω	
V 14	6AL5	390Ω	390Ω	.1Ω	0Ω	4.8 Meg.	0Ω	4.8 Meg.		
V 15	6SN7GT	5 Meg.	†33KΩ	1.5KΩ	150KΩ	†300KΩ	1.5KΩ	0Ω	.1Ω	
V 16	6BG6G	1 Meg.	0Ω	82Ω	Inf.	1 Meg.	Inf.	.1Ω	†8.3KΩ	TOP CAP †6KΩ
V 17	6W4GT	Inf.	Inf.	†6KΩ	†6KΩ	†310Ω	†310Ω	†6KΩ	†6KΩ	
V 18	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP †6KΩ
V 19	5U4G	Inf.	20KΩ	20KΩ	70Ω	20KΩ	65Ω	20KΩ	20KΩ	
V 20	12LP4	0Ω	270KΩ	PIN 10 †1000Ω	PIN 11 90KΩ	PIN 12 .1Ω				

† MEASURED FROM PIN 8 OF V19
# MEASURED FROM PIN 8 OF V12

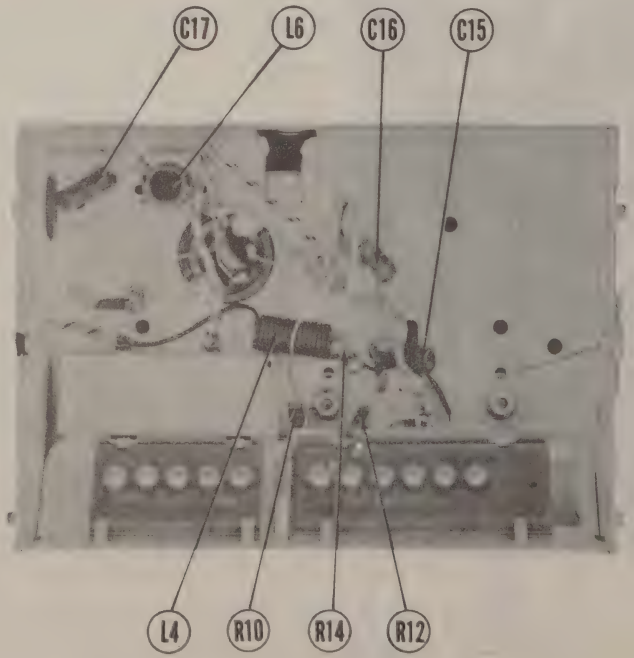
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



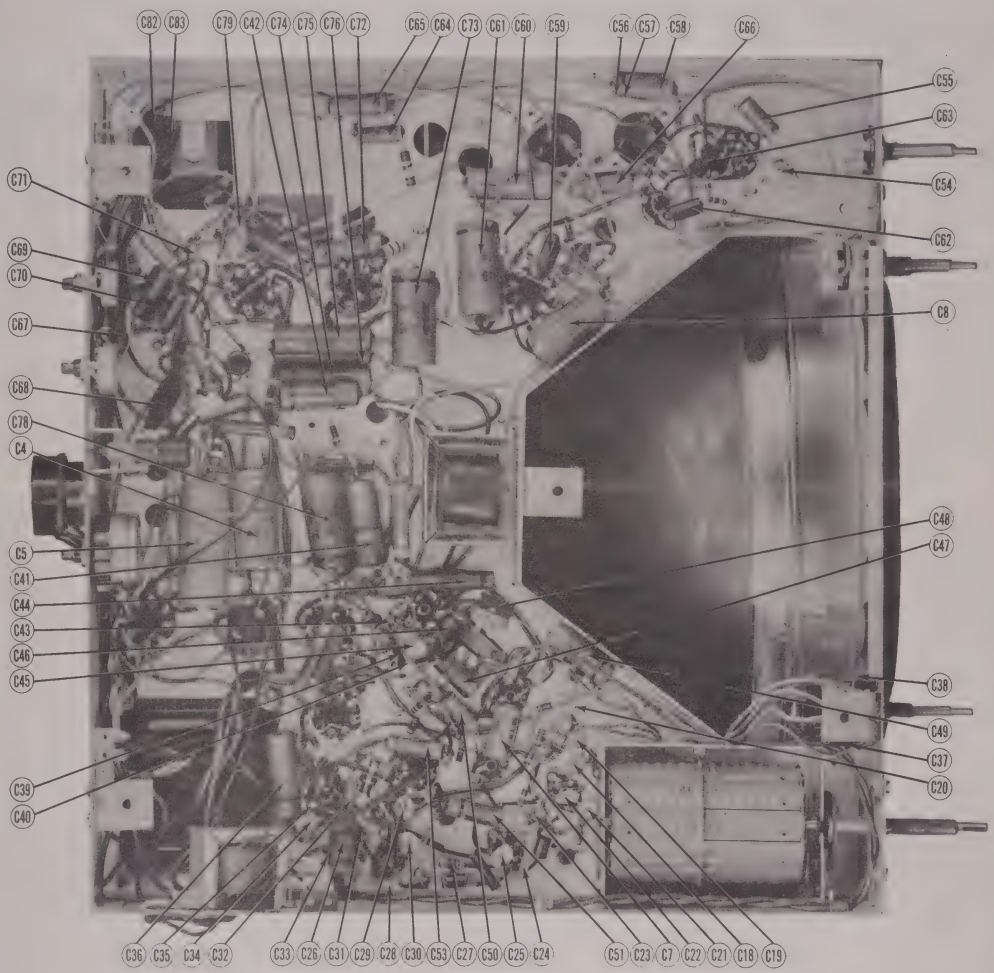
CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



RF TUNER-RIGHT SIDE

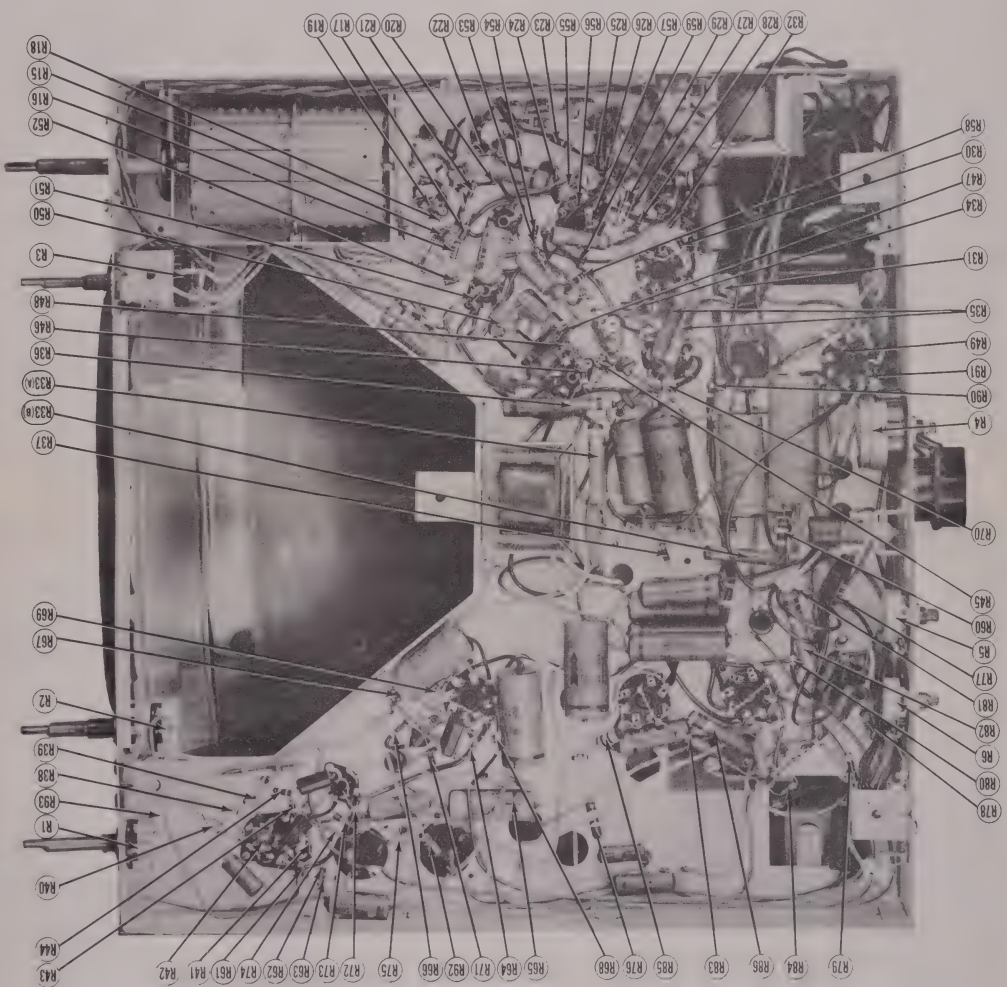


RF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

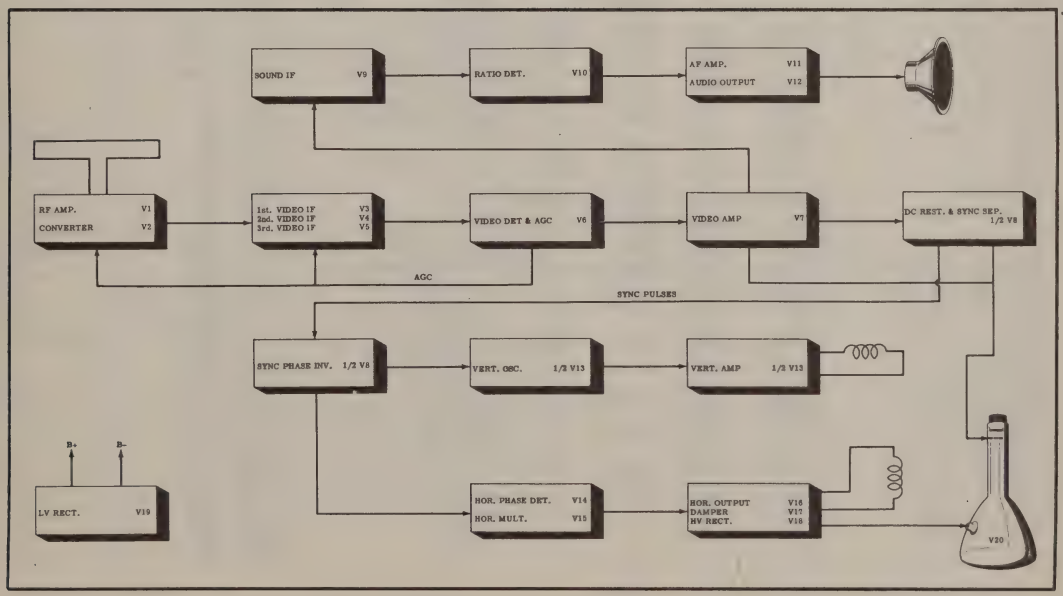


HORIZONTAL OSCILLATOR AND LINEARITY ADJUSTMENTS

1. Turn the set on and tune in a TV station.
2. Turn the horizontal hold control to the mid-position of its range.
3. Adjust the horizontal locking adjustment (B1) to the mid-position of the range over which the picture synchronizes horizontally.
4. Adjust the horizontal drive trimmer (B2) clockwise as far as possible without crowding the right side of the picture.
5. If the set has a horizontal size adjustment (B3), adjust it so the picture fills the mask horizontally.
6. Adjust the horizontal linearity adjustment until the picture is symmetrical from left to right. Readjustment of B2 may be necessary to obtain optimum results.

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove five screws holding rear cover.
3. Unsolder antenna leads from terminals. Remove rear cover.
4. Disconnect speaker plug.
5. Remove five screws holding chassis in cabinet. Remove chassis.
6. Remove four 3/8" hex nuts holding speaker. Remove speaker.



BLOCK DIAGRAM

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: REGAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.		6AG5	7BD	
V2	Converter		6J6	7BF	
V3	1st Video IF		6AU6	7BK	
V4	2nd Video IF		6AU6	7BK	
V5	3rd Video IF		6AU6	7BK	
V6	Video Det.-AGC Rectifier		6AL5	6BT	
V7	Video Amp.		6AC7	8N	
V8	DC Restorer-Sync. Sep.-Phase Inverter		12AU7	9A	
V9	Sound IF Amp.		6AU6	7BK	
V10	Ratio Det.		6AL5	6BT	
V11	AF Amp.		6AV6	7BT	
V12	Audio Output		6V6GT	7AC	
V13	Vert. Osc.-Vert. Amp.		6SN7GT	8BD	
V14	Hor. Phase Det.		6AL5	6BT	
V15	Hor. Mult.		6SN7GT	8BD	
V16	Hor. Output		6BG6G	5BT	
V17	Damper		6W4GT-	4CG	
V18	HV Rectifier		1B3GT	3C	
V19	LV Rectifier		5U4G	5T	
V20 A	Picture Tube		12LP4	12D	Used in models 1207 and 1208
B	Picture Tube		10BP4	12D	Used in model 1007
C	Picture Tube		16DP4	12D	Used in model 1607

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: REGAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	500		AF88K	UP4450		TVL-50	▲ Filter
B	40	500						■ Filter
C2A	20	450		AF4444J	UP8DJ1112		TVL-40	▲ Decoupling
B	10	450						■ Filter
C	10	450						▲ Vert. Osc. Decoupling
D	10	450						V. Amp. Screen Bypass
C3	40	450		AF8J	UP4045		TVL-45	Filter
C4	500	6		PRS6/500	BRH605		UHC-506	Filter
C5	40	300		PRS450/40	BR4035		UT-40	Output Plate Decoupling
C6	50	150		AF10D	UP5015		TVL-1	Decoupling
C7	1	50		PRS150/4	BR145		TVA-11	Stabilizing Cap.
C8	100	25		PRS25/100	BRH251A		TVA-8	Vert. Output Cath. Bypass
C9	5					NPOK-5		Fixed Trimmer
C10	120					GP2K-120		RF Decoupling
C11	1000					GP2L-001	29C4	RF Filament Bypass
C12	100					GP1K-100		RF Coupling
C13	20					NPOK-20		Osc. Grid Cap.
C14	10					NPOK-10		Fixed Trimmer
C15	1000					GP2L-001	29C4	Conv. Filament Bypass
C16	1000					GP2L-001		RF Bypass
C17	120					GP2K-120		IF Coupling
C18	5000			1467-005	1D5D5	811-005	29C1	AGC Filter
C19	5000			1467-005	1D5D5	811-005	29C1	AGC Filter
C20	5000			1467-005	1D5D5	811-005	29C1	RF Bypass
C21	5000			1467-005	1D5D5	811-005	29C1	1st V. IF Fil. Bypass
C22	5000			1467-005	1D5D5	811-005	29C1	1st V. IF Decoupling
C23	100			1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C24	5000			1467-005	1D5D5	811-005	29C1	2nd V. IF Fil. Bypass
C25	5000			1467-005	1D5D5	811-005	29C1	2nd V. IF Decoupling
C26	.1	400		P488-1	GT4P1		TM-1	AGC Filter
C27	100			1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C28	5000			1467-005	1D5D5	811-005	29C1	3rd V. IF Filament Bypass
C29	5000			1467-005	1D5D5	811-005	29C1	3rd V. IF Cathode Bypass
C30	5000			1467-005	1D5D5	811-005	29C1	3rd V. IF Decoupling
C31	100			1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C32	120	500		1468-0001	5W5T1	GP2K-120	1FM-31	IF Coupling
C33	.01	400		P488-01	GT4S1	GP2-335-01	TM-11	DAGC Decoupling
C34	5000			1467-005	1D5D5	811-005	29C1	Det.-AGC Fil. Bypass
C35	5			1468-000005	5W5V5	NPOK-5	MS-45	V. Diode Filter
C36	.1	600		P688-1	GT6P1		TM-1	Bias Filter
C37	680	500		1468-00075	1W5T7	GP2K-680	1FM-37	V. Amp. Cathode Bypass
C38	470	500		1468-0005	5W5T5	GP2K-470	1FM-35	V. Amp. Cathode Bypass
C39	50	500		1469-00005	5R5Q5	NPOM-50	MS-45	Fixed Trimmer
C40	50	500		1469-00005	5R5Q5	NPOM-50	MS-45	Fixed Trimmer
C41	.1	600		P688-1	GT6P1		TM-1	Video Coupling
C42	.1	400		P488-1	GT4P1		TM-1	Pic. Tube Cath. Dec.
C43	39			1468-00004	5W5Q4	GP1K-39	1FM-44	IF Coupling
C44	.02	400		P488-02	GT4S2		TM-12	S. IF Cathode Decoupling
C45	5000			1467-005	1D5D5	811-005	29C1	S. IF Screen Bypass
C46	.02	400		P488-02	GT4S2		TM-12	S. IF Decoupling
C47	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	Diode Load Cap.
C48	3900	500		1467-004	1D5D4		1FM-24	De-emphasis
C49	.05	600		P688-05	GT6S5		TM-15	Audio Coupling
C50	.005	600		P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C51	.02	400		P488-02	GT4S2		TM-12	Audio Coupling
C52	.05	400		P488-05	GT4S5		TM-15	Output Grid Decoupling *
C53	.005	600		P688-005	GT6D5	GP2M-005	TM-25	Output Plate Bypass
C54	22			1468-000025	5W5Q25	GP1K-22	MS-425	Sync. Clipper Plate Bypass
C55	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Sync. Coupling
C56	.002	1000		P1088-002	GT16D2		MB-22	Integrator Net.
C57	.005	1000		P1088-005	GT16D5		MB-25	Integrator Net.
C58	.005	1000		P1088-005	GT16D5		MB-25	Integrator Net.

CAPAC

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEM: REGAL PART No.	REPLACEM: AEROVOX PART No.	REPLACEM: C P P
C59	4700	500		1467-005	I
C60	.1	600		P688-1	G
C61	.25	600		684-25	G
C62	1000	500		1468-001	I
C63	1000	500		1468-001	I
C64	.01	600		P688-01	G
C65	.005	1000		P1088-005	G
C66	.005	600		P688-005	G
C67	.05	600		P688-05	G
C68	3900	500			
C69	330	500		1468-00035	5
C70	390	500		1468-0004	5
C71	270	500		1468-00025	5
C72	.05	600		P688-05	G
C73	.25	600		684-25	G
C74	.035	1000		P1088-033	
C75	.05	1000		P1088-05	G
C76	.05	1000		P1088-05	G
C77	.01	600		P688-01	G
C78	.25	600		684-25	G
C79	18	1500			
C80	18	1500			
C81	500	10000			
C82	.01	400		P488-01	G
C83	.01	400		P488-01	G

* Not used in all models.
† Model 1007 uses .05MFD in this application.

ITEM No.	RATING: RESIST-ANCE	RATING: WATTS	REPLACEMENT DAT: REGAL PART No.	REPLACEMENT DAT: IRC PART No.
R1	100KΩ	½		Q11-128
R2A	1 Meg.	½		B11-137 *
B	50KΩ	½		B11-123 *
C	Shaft End			E187 *
R3A	750Ω	2		
B	250KΩ	½		
R4	1500Ω	4		
R5	2.5 Meg.	½		Q11-239
R6	5000Ω	½		Q11-114

* Additional parts to be used with "Concentrikit".
Note. Not used on model 1607.

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: REGAL PART No.	REPLACEMENT DATA: IRC PART N
R7	3900Ω	½		BTS-3900
R8	47KΩ	½		
R9	10KΩ	½		
R10	2200Ω	½		BTS-2200
R11	4700Ω	½		
R12	220KΩ	½		
R13	10KΩ	½		
R14	4700Ω	½		
R15	100Ω	½		
R16	330Ω	½		
R17	330Ω	½		
R18	10KΩ	½		
R19	82Ω	½		
R20	100Ω	½		
R21	18KΩ	½		
R22	82Ω	½		
R23	100Ω	½		
R24	8200Ω	½		
R25	82Ω	½		
R26	100Ω	½		
R27	680KΩ	½		BTS-680K
R28	680KΩ	½		BTS-680K
R29	39KΩ	1		BTA-39K
R30	8200Ω	½		BTS-8200
R31	1000Ω	½		BTS-1000
R32	120Ω	½		
R33A	14KΩ 5%	2		
B	13KΩ 5%	2		
R34	22KΩ	3		
R35	22KΩ	2		BT-2-22K
R36	5600Ω	1		BTA-5600
R37	2200Ω	½		BTS-2200
R38	270KΩ	½		BTS-270K
R39	820KΩ 5%			BTS-820K
R40	47KΩ	½		BTS-47K
R41	1 Meg.	½		BTS-1 Me
R42	3900Ω	½		BTS-3900
R43	3900Ω	½		BTS-3900
R44	3900Ω	½		BTS-3900
R45	470KΩ	½		
R46	1000Ω	½		BTS-1000
R47	100KΩ	½		
R48	15KΩ	½		BTS-15K
R49	1000Ω	½		BTS-1000
R50	15KΩ	½		BTS-15K
R51	22KΩ	½		BTS-22K

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: REGAL PART No.	STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AQ5	6AQ5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6AU6	6AU6	7BK	
V4	2nd Video IF	6AU6	6AU6	7BK	
V5	3rd Video IF	6AU6	6AU6	7BK	
V6	Video Det.-AGC Rectifier	6AL5	6AL5	6BT	
V7	Video Amp.	6AC7	6AC7	8N	
V8	DC Restorer-Sync. Sep.-Phase Inverter	12AU7	12AU7	9A	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Det.	6AL5	6AL5	6BT	
V11	AF Amp.	6AV6	6AV6	7BT	
V12	Audio Output	6V6GT	6V6GT	7AC	
V13	Vert. Osc.-Vert. Amp.	6SN7GT	6SN7GT	8BD	
V14	Hor. Phase Det.	6AL5	6AL5	6BT	
V15	Hor. Mult.	6SN7GT	6SN7GT	8BD	
V16	Hor. Output	6B6SG	6B6SG	5BT	
V17	Damper	6W4GT-A	6W4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	2C	
V19	LV Rectifier	5U4G	5U4G	5T	
V20 A	Picture Tube	12LP4	12LP4	12D	Used in models 1207 and 1208
B	Picture Tube	16BP4	16BP4	12D	Used in model 1007
C	Picture Tube	16DP4	16DP4	12D	Used in model 1607

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	REGAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	500		AF88K	UP4450		TVL-50	▲ Filter
B	40	500						■ Filter
C2A	20	450		AF4444J	UP8DJ1112		TVL-40	● Decoupling
B	10	450						■ Filter
C	10	450						▲ Vert. Osc. Decoupling
D	20	450						V. Amp. Screen Bypass
C3	40	450		AF8J	UP4045		TVL-45	Filter
C4	500	6		PRS6 500	BR1605	UHC-506	Filter	
C5	40	300		PRS450-40	BR4035	UT-40	Output Plate Decoupling	
C6	50	150		AF10D	UP5015		TVL-1	Decoupling
C7				PRS150/4	BR145		TVA-11	Stabilizing Cap.
C8	100	25		PRS25/100	BRH2S1A		TVA-8	Vert. Output Cath. Bypass
C9	3					NPOK-5		Fixed Trimmer
C10	120					GP2K-120		RF Decoupling
C11	1000					GP2L-001	29C4	RF Filament Bypass
C12	100					GP1K-100		RF Coupling
C13	20					NPOK-20		Osc. Grid Cap.
C14	10					NPOK-10		Fixed Trimmer
C15	2000					GP2L-001	29C4	Conv. Filament Bypass
C16	1000					GP2L-001		RF Bypass
C17	120					GP2K-120		IF Coupling
C18	5000			1467-005	1D5D5	81L-005	29C1	AGC Filter
C19	5000			1467-005	1D5D5	81L-005	29C1	AGC Filter
C20	5000			1467-005	1D5D5	81L-005	29C1	RF Bypass
C21	5000			1467-005	1D5D5	81L-005	29C1	1st V. IF Fil. Bypass
C22	5000			1467-005	1D5D5	81L-005	29C1	1st V. IF Decoupling
C23	100			1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C24	5000			1467-005	1D5D5	81L-005	29C1	2nd V. IF Fil. Bypass
C25	5000			1467-005	1D5D5	81L-005	29C1	2nd V. IF Decoupling
C26	1	400		P488-1	GT4P1		TM-1	AGC Filter
C27	100			1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C28	5000			1467-005	1D5D5	81L-005	29C1	3rd V. IF Filament Bypass
C29	5000			1467-005	1D5D5	81L-005	29C1	3rd V. IF Cathode Bypass
C30	5000			1467-005	1D5D5	81L-005	29C1	3rd V. IF Decoupling
C31	100			1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C32	120	500		1468-0001	5W5T1	GP2K-120	1FM-31	IF Coupling
C33	01	400		P488-01	GT4S1	GP2-335-01	TM-11	DAGC Decoupling
C34	5000			1467-005	1D5D5	81L-005	29C1	Det.-AGC Fil. Bypass
C35	5			1468-000005	5W5V5	NPOK-5	MS-45	V. Diode Filter
C36	1	600		P488-1	GT4P1		TM-1	Bias Filter
C37	680	500		1468-00075	1W5T7	GP2K-680	1FM-37	V. Amp. Cathode Bypass
C38	470	500		1468-0005	5W5T5	GP2K-470	1FM-35	V. Amp. Cathode Bypass
C39	50	500		1469-00005	5R5Q5	NPOM-50	MS-45	Fixed Trimmer
C40	50	500		1469-00005	5R5Q5	NPOM-50	MS-45	Fixed Trimmer
C41	1	600		P488-1	GT4P1		TM-1	Video Coupling
C42	1	400		P488-1	GT4P1		TM-1	Pic. Tube Cath. Dec.
C43	39			1468-00004	5W5Q4	GP1K-39	1FM-44	IF Coupling
C44	02	400		P488-03	GT4S3		TM-12	S. IF Cathode Decoupling
C45	5000			1467-005	1D5D5	81L-005	29C1	S. IF Screen Bypass
C46	02	400		P488-02	GT4S2		TM-12	S. IF Decoupling
C47	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	Diode Load Cap.
C48	3900	500		1467-004	1D5D4		1FM-34	De-emphasis
C49	05	600		P488-05	GT4S5		TM-15	Audio Coupling
C50	005	600		P488-005	GT4D5	GP2M-005	TM-25	Audio Coupling
C51	02	400		P488-02	GT4S2		TM-12	Audio Coupling
C52	05	400		P488-05	GT4S5		TM-15	Output Grid Decoupling *
C53	005	600		P488-005	GT4D5	GP2M-005	TM-25	Output Plate Bypass
C54	22			1468-000025	5W5Q25	GP1K-22	MS-425	Sync. Clipper Plate Bypass
C55	01	600		P488-01	GT4S1	GP2-335-01	TM-11	Sync. Coupling
C56	002	1000		P1088-002	GT16D2		MB-22	Integrator Net.
C57	005	1000		P1088-005	GT16D5		MB-25	Integrator Net.
C58	005	1000		P1088-005	GT16D5		MB-25	Integrator Net.

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	VOLT	REGAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C59	4700	500		1467-005	1D5D5	GP2M-005	1FM-25	Vert. Osc. Grid Cap.
C60	.1	600		P488-1	GT4P1		TM-1	Vert. Discharge
C61	.25	600		684-25	GT6P25		TC-2	Vert. Sweep Coupling
C62	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	Hor. Sync. Coupling
C63	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	Hor. Sync. Coupling
C64	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Hor. Feedback Filter
C65	.005	1000		P1088-005	GT16D5		MB-25	Hor. Feedback Coupling †
C66	.005	600		P688-005	GT6D5	GP2M-005	TM-25	AFC Filter
C67	.05	600		P688-05	GT6S5		TM-15	AFC Filter
C68	3900	500						Fixed Trimmer
C69	330	500		1468-00035	5W5T3	GP2K-330	1FM-335	Hor. MV Feedback
C70	390	500		1468-0004	5W5T4	GP2K-390	1FM-34	Hor. Discharge
C71	270	500		1468-00025	5W5T25	GP2K-270	1FM-325	Hor. Sweep Coupling
C72	.05	600		P688-05	GT6S5		TM-15	Hor. Output Screen Bypass
C73	.25	600		684-25	GT6P25		TC-2	Hor. Output Cath. Bypass
C74	.035	1000		P1088-033				Damper Filter
C75	.05	1000		P1088-05	GT16S5		TR-15	Damper Filter
C76	.05	1000		P1088-05	GT16S5		TR-15	Damper Filter
C77	.01	600		P688-01	GT6S1		TM-11	Fixed Trimmer *
C78	.25	600		684-25	GT6P25		TC-2	Hor. Sweep Coupling
C79	18	1500						Hor. Feedback
C80	18	1500						Hor. Feedback *
C81	500	10000				410-500		HV Filter
C82	.01	400		P488-01	GT4S1	GP2-335-01	TM-11	Line Filter
C83	.01	400		P488-01	GT4S1	GP2-335-01	TM-11	Line Filter

* Not used in all models.
† Model 1007 uses .05MFD in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: REGAL PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	100KΩ	½		Q11-128	M-49-S	Brightness control
R3A	1 Meg.	½		B11-137 *		Vert. hold control-panel
B	250KΩ	½		B11-123 *	P-9701L1-S	Horiz. hold control-rear
C	Shaft End			E187 *		Attach per instructions in "Concentrikit".
R3A	750Ω	2				Contrast control, tapped at 500Ω
B	2500Ω	1				Volume control and switch
R4	1500Ω	4			10-1500	Focus control, Wire Wound See note
R5	2.5 Meg.	½		Q11-239	M-54-S	Vert. size control
R6	500Ω	½		Q11-114	M-12-S	Vert. linearity control

* Additional parts to be used with "Concentrikit".
Note. Not used on model 1607.

RESISTORS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: REGAL PART No.	IRC PART No.	IDENTIFICATION CODES
					ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R7	2000Ω	½		BTS-3900	RF Grid
R8	47KΩ	½			AGC Network
R9	10KΩ	½			RF Coil Shunt
R10	2200Ω	½		BTS-2200	RF Decoupling
R11	4700Ω	½			Conv. Grid
R12	220KΩ	½			Conv. Grid
R13	10KΩ	½			Osc. Grid
R14	4700Ω	½			Osc. Plate
R15	100Ω	½			Decoupling
R16	330Ω	½			AGC Network
R17	330Ω	½			AGC Network
R18	10KΩ	½			1st Video IF Grid
R19	82Ω	½			1st Video IF Cathode
R20	100Ω	½			1st Video IF Decoupling
R21	18KΩ	½			2nd Video IF Grid
R22	82Ω	½			2nd Video IF Cathode
R23	100Ω	½			2nd Video IF Decoupling
R24	8200Ω	½			3rd Video IF Grid
R25	82Ω	½			3rd Video IF Cathode
R26	100Ω	½			3rd Video IF Decoupling
R27	680KΩ	½		BTS-680K	AGC Network See Note 1
R28	680KΩ	½		BTS-680K	AGC Rect. Diode Load
R29	39KΩ	1		BTA-39K	Voltage Divider
R30	8200Ω	½		BTS-8200	Video Det. Diode Load
R31	1000Ω	½		BTS-1000	Bias Network
R32	120Ω	½			Parasitic Supp.
R33A	14KΩ 5%	3			Video Amp. Plate
B	13KΩ 5%	2			Video Amp. Plate
R34	22KΩ	3			Video Amp. Screen See Note 2
R35	22KΩ	2		BT-2-22K	Voltage Divider
R36	5800Ω	1		BTA-5800	Voltage Divider
R37	2200Ω	½		BTS-2200	Picture Tube Grid
R38	270KΩ	½		BTS-270K	DC Rest. Load
R39	820KΩ 5%	½		BTS-820K-5%	Sync. Sep. Plate
R40	47KΩ	½		BTS-47K	Voltage Divider
R41	1 Meg.	½		BTS-1 Meg.	Sync. Phase Inv. Grid
R42	3900Ω	½		BTS-3900	Sync. Phase Inv. Cathode
R43	3900Ω	½		BTS-3900	Sync. Phase Inv. Plate
R44	3900Ω	½		BTS-3900	Sync. Phase Inv. Plate
R45	470KΩ	½			Sound IF Grid
R46	1000Ω	½		BTS-1000	Sound IF Cathode
R47	10KΩ	½			Sound IF Screen
R48	15KΩ	½		BTS-15K	Voltage Divider
R49	1000Ω	½		BTS-1000	Sound IF Decoupling
R50	15KΩ	½		BTS-15K	De-emphasis
R51	22KΩ	½		BTS-22K	Ratio Det. Diode Load

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: REGAL PART No.	IRC PART No.	IDENTIFICATION CODES
R52	22KΩ 5%	½		BTS-22K-5%	Ratio Det. Diode Load
R53	470KΩ	½		BTS-470K	AF Grid
R54	330KΩ 5%	½		BTS-330K-5%	AF Plate
R55	100KΩ	½		BTS-100K	Output Grid
R56	330KΩ 5%	½		BTS-330K-5%	Voltage Divider
R57	180KΩ	½		BTS-180K	Voltage Divider
R58	470KΩ	½		BTS-470K	Voltage Divider
R59	470KΩ	½		BTS-470K	Voltage Divider
R60	390Ω	1		BW-1-390	Filter
R61	22KΩ	½		BTS-22K	Integrator
R62	8200Ω	½		BTS-8200	Integrator
R63	8200Ω	½		BTS-8200	Integrator
R64	1 Meg.	½		BTS-1 Meg.	Vert. Osc. Grid
R65	1.5 Meg.	½		BTS-1.5 Meg.	Vert. Osc. Plate
R66	6.8 Meg.	½		BTS-6.8 Meg.	Voltage Divider
R67	100KΩ	½		BTS-100K	Voltage Divider
R68	56KΩ	½		BTS-56K	Vert. Output Cathode
R69	2.2 Meg.	½		BTS-2.3 Meg.	Vert. Output Grid
R70	6800Ω	1		BTA-6800	Vert. Output Plate Decoupling See Note 3
R71	3300Ω	½		BTS-3300	Vert. Peaking
R72	100KΩ	½		BTS-100K	Horiz. Phase Det. Load
R73	100KΩ	½		BTS-100K	Horiz. Phase Det. Load
R74	4.7 Meg.	½		BTS-4.7 Meg.	Horiz. Phase Det. Load
R75	470KΩ	½		BTS-470K	Horiz. AFC Filter Network
R76	390Ω	1		BTA-390	Feedback See Note 4
R77	5800Ω	½		BTS-5800	Horiz. Osc. Plate
R78	1500Ω	½		BTS-1500	Horiz. Osc. Cathode
R79	100KΩ	½		BTS-100K	Horiz. Osc. Grid
R80	270KΩ	½		BTS-270K	Horiz. Osc. Plate
R81	56KΩ	½		BTS-56K	Filter
R82	22KΩ	2		BT-2-22K	Filter
R83	68Ω 5%	1			Parasitic Supp.
R84	1 Meg.	½		BTS-1 Meg.	Horiz. Output Grid
R85	82Ω	1		BW-1-82	Horiz. Output Cathode
R86	8200Ω 5%	2		BT-2-8200-5%	Horiz. Output Screen
R87	6000Ω	20			Damper Filter, Wire Wound, tapped at 500Ω and 1000Ω
R88	3.3Ω	½			HV Filament, Wire Wound
R89	1 Meg.	1			HV Filter
R90	15Ω	½		BW-1-15	Bias Network
R91	1000Ω	½		BTS-1000	Acc. Anode Decoupling
R92	220KΩ	½		BTS-220K	Voltage Divider
R93	10KΩ	½		BTS-10K	Voltage Divider
R94	10Ω	10		AB-150	Filter, Wire Wound, See Note 5
R95	4700Ω	½		BTS-4700	Feedback Network See Note 6

Note 1. Some models use 1 Meg. resistor in this application.
Note 2. Some models use two resistors in parallel to obtain required resistance and wattage
Note 3. Not used in all models, or may be shorted by a shorting strap.
Note 4. Model 1007 uses 27KΩ resistor in this application.
Note 5. Used only in model 1607.
Note 6. Used only in model 1007.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: REGAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC at 1.54A	750VCT 180ADC	5VAC at 3A	6.3VAC 6.15A		P-8153 # and P-8134 #	P-3063 and P-2945 #	
		SEC. 4	SEC. 5					
		6.3VAC at 1.2A	6.3VAC at 1.2A					

* Mount filament transformer under chassis.
# Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	SEC.	REPLACEMENT DATA: REGAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	7Ω						Hor. Sync. Coil
T3	175Ω	1360Ω		A-8117 #	A-3000 #	TSO-1 # TFB-1 ■	Vert. Block Osc. Trans
T4	355Ω	SEC. 1		A-8117			Hor. Output Trans.
	Tap at 177Ω	10.5Ω Tap at .5Ω					
		SEC. 2					
		0Ω					
T5	1440Ω	9.7Ω		A-8113	A-3025 #	TSO-5	Vert. Output Trans.
T6A	13.5Ω			DY-1			Hor. Deflection Coil
B	83Ω						Vert. Deflection Coil
T7	470Ω			FC-10			Focus coil

Drill one new mounting hole.
Drill new mounting holes.
■ Use TFB-3 for model 1607.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		REGAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T8	6KΩ	3.9Ω	580Ω	.6Ω		A-3849	A-2902	RO-9 §	§ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	REGAL PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	90Ω	3.9Ω	†		▲	† Used in model 1208.
B	90Ω				▲	▲ Supplied on order. Give field resistance and current.
	CONE DIA.	V. C. DIA.				
SP2A	3 7/8" x 6"	9/16"				
B	12"		†			

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	REGAL PART No.	MEISSNER PART No.	
L1	Ant. Coil	0Ω				
L2	RF Plate, Mixer Grid and Osc.	0Ω				
L3	Fil. Choke	0Ω				
L4	Fil. Choke	0Ω				
L5	1st Video IF	.1Ω				
L6	IF Coupling	1Ω				
L7	Fil. Choke	0Ω				
L8	2nd Video IF	.1Ω				
L9	Fil. Choke	0Ω				
L10	2nd Video IF Plate Choke	3Ω				
L11	3rd Video IF	.1Ω				
L12	Fil. Choke	0Ω				
L13	3rd Video IF Plate Choke	3Ω				
L14	4th Video IF	.1Ω				
L15	Peaking	4.5Ω				
L16	Peaking	12Ω				
L17	Sound Take-Off	1.5Ω	1.5Ω			
L18	Peaking	7Ω				Wound on 18KΩ resistor.
L19	Peaking	10Ω				
L20	Ratio Det. Transformer	6Ω	.5Ω			
L21	Hor. Size	.5Ω				
L22	Hor. Linearity	34Ω				

MISCELLANEOUS

ITEM No.	PART NAME	REGAL PART No.	NOTES
M1A	RF Tuner	TV-101	
B	RF Tuner	TV-102	
M2	Ion Trap		
M3	Fuse		Type 3AG .25A
	Trimmer		25-280MMF. Hor. Drive

SILVERTONE MODELS 9073, 9073A
(Ch. 135.244), 9073B (Ch. 135.244-1)

SILVERTONE MODELS 9073, 9073A
(Ch. 135.244), 9073B (Ch. 135.244-1)

SILVERTONE MODEL 9073B

TRADE NAME	Silvertone, Models 9073, 9073A (Ch. 135.244), 9073B (Ch. 135.244-1)
SUPPLIER	Sears Roebuck and Co., 925 S. Homan St., Chicago, Illinois
TYPE SET	AC Operated Combination Phono-Radio Superheterodyne Receiver with Loop Antenna
TUBES(FIVE)	Types 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT DET-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC — RATING: .25 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial turn tuning gang fully closed and set the last calibration mark on the low frequency end of the dial even with the indicator mask on the cabinet.

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator of rear section of tuning gang. Low side to B-.	455KC (400 ~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output.	"	A5	"

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."

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PARTS LIST AND DESCRIPTIONS

SILVERTONE MODEL 9073B

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7GT	12SA7GT	8AD	
V2	IF Amp.	12SK7GT	12SK7GT	8N	
V3	DET.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	F-5051	PRS150/40-40	EDL4415		TA-440	Filter Blue
B	40	150						Filter Red
C2	.05	400	F-1345	P488-05	PTE4S5		TM-15	AVC Filter
C3	.05	400	F-1345	P488-05	PTE4S5		TM-15	AVC Filter
C4	.05	400	F-1345	P488-05	PTE4S5		72P51	Line Isolation
C5	.09	200	F-4957	P288-1	PTE4P1		TM-1	Phono Isolation
C6	250	500	F-6488	1468-00025	5W5T25	GP2K-250	1FM-325	Diode RF Filter
C7	250	500	F-6488	1468-00025	5W5T25	GP2K-250	1FM-325	Tone Compensation
C8	.005	600	F-4894	P688-005	PTE6D5	GP2M-005	TM-25	Audio Coupling
C9	250	500	F-6488	1468-00025	5W5T25	GP2K-250	1FM-325	AF Amp. Plate Bypass
C10	.01	400	F-1344	P488-01	PTE4S1	GP2-335-01	TM-11	Audio Coupling
C11	.005	600	F-1344	P688-005	PTE6D5	GP2M-005	TM-25	Output Plate Bypass See Note
C12	.05	400	F-1346	P488-05	PTE4S5		TM-15	Rect. Bypass

Note. Some models use .01MFD in this application.

CONTROLS

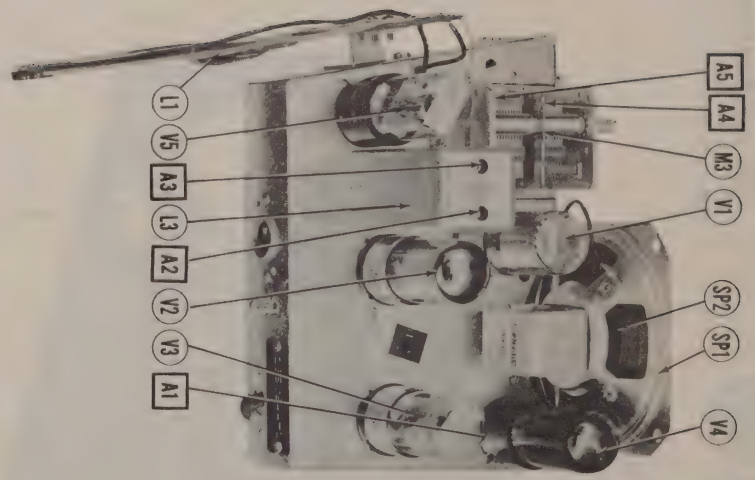
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	F-7555	Q13-137	AM-63-Z	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ		F-4025	BTS-22K	Osc. Grid
R3	1 Meg.		F-1262	BTS-1 Meg.	AVC Network
R4	47KΩ		F-4069	BTS-47K	Diode Filter
R5	6.8 Meg.		F-4028	BTS-6.8 Meg.	AF Grid
R6	220KΩ		F-4026	BTS-220K	AF Plate
R7	180Ω		F-4067	BW-½-180	Output Cathode
R8	470KΩ		F-4027	BTS-470K	Output Grid
R9	1000Ω	1	F-5358	BW-1-1000	Filter
R10	470KΩ		F-4027	BTS-470K	Tone Compensation
R11	220KΩ		F-4026	BTS-220K	Isolation
R12	33Ω				Surge Limiter See Note

Note Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2600Ω	3.5Ω	300Ω Tap. at 13Ω	.5Ω	F-4875	A-3330	A-3031	RO-3	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-113		
SP1	PM	3.5Ω	F-6102	MOD. P4-X	4A07	
	CONE DIA.	V. C. DIA.				
SP2	3 7/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	
L1	Loop Ant.	0Ω	1.3Ω	F6100		
L2	Osc. Coil	7.5Ω		F7139	14-1060	
L3	Input IF	21Ω	20Ω	F4813	16-6658	
L4	Output IF	29Ω	29Ω	F4846	16-6661	

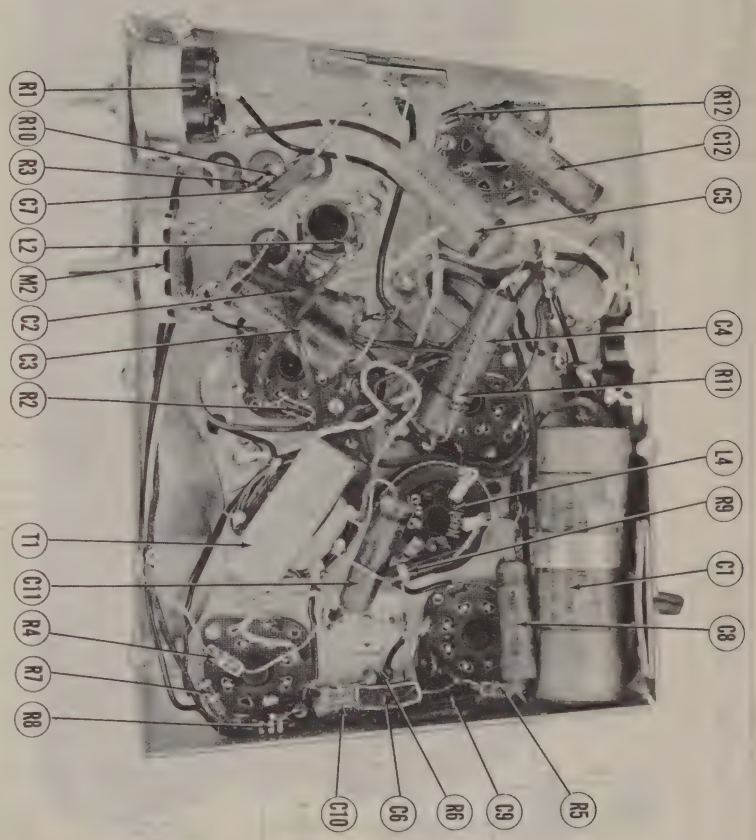
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	Silvertone PART No.	ASTATIC PART No.	
M1	F-7570	ACD-J	

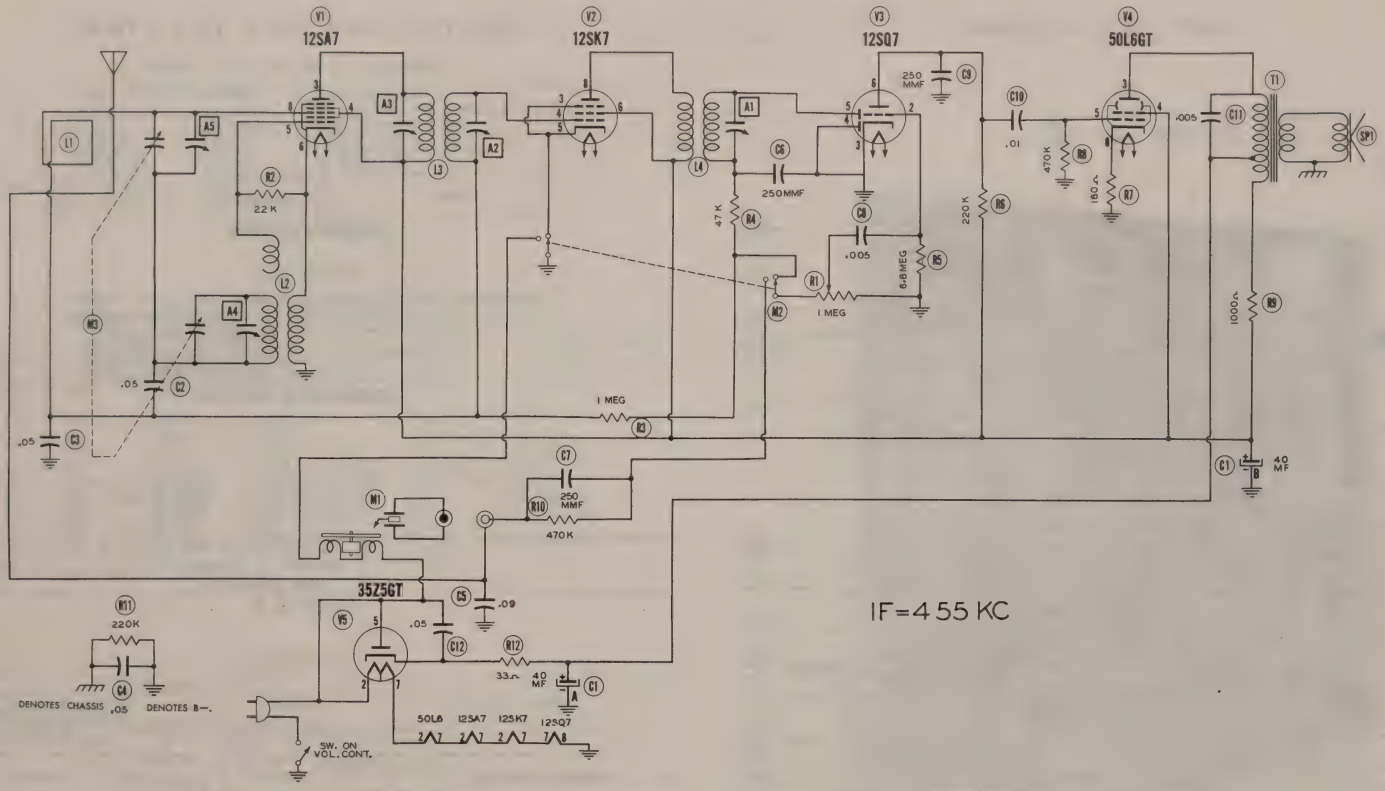
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M2	Switch	F-7554	Phono-Radio
M3	2 Gang Var. Cap.	F-7563	(18-384MMF, 13-124MMF)
	Cabinet	F-294	Model 9073
	Cabinet	F-296	Models 9073A, 9073B
	Knob	F-1577	Volume and Radio-Phono SW.
	Knob	F-7511	Station Selector

CHASSIS—BOTTOM VIEW



SILVERTONE MODEL 9073B



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	0V.	36VAC	92VDC	92VDC	8-9VDC	0V.	24VAC	-.2VDC
V 2	12SK7GT	0V.	24VAC	0V.	-.2VDC	0V.	92VDC	12VAC	92VDC
V 3	12SQ7GT	0V.	-.5VDC	0V.	0V.	-.4VDC	65VDC	12VAC	0V.
V 4	50L6GT	0V.	85VAC	115VDC	92VDC	0V.	0V.	36VAC	6.4VDC
V 5	35Z5GT	0V.	117VAC	110VAC	0V.	117VAC	120VDC	85VAC	122VDC

‡Taken with vacuum tube voltmeter. Radio phono switch in phono position.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	220KΩ	36Ω	†1000Ω	†1000Ω	22KΩ	.5Ω	24Ω	2 Meg
V 2	12SK7GT	220KΩ	24Ω	0Ω	2 Meg	0Ω	†1000Ω	12Ω	†1000Ω
V 3	12SQ7GT	220KΩ	6.8 Meg	0Ω	0Ω	1 Meg	†220KΩ	12Ω	0Ω
V 4	50L6GT	Inf	85Ω	†175Ω	†1000Ω	470KΩ	0Ω	36Ω	180Ω
V 5	35Z5GT	Inf	120Ω	112Ω	Inf	120Ω	65KΩ	85Ω	65KΩ

† Measured from pin 8 of V5.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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83-10

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

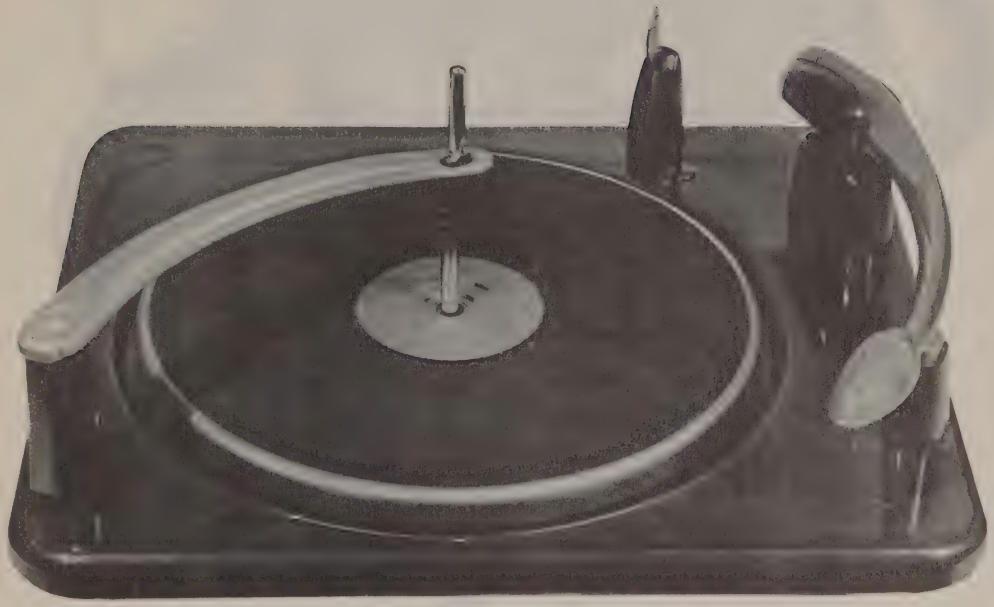

FIG. 1—TOP VIEW

GENERAL INFORMATION

The 101.761-3 and 101.762-3 record changers are designed to play automatically up to twelve 10-inch, ten 12-inch, or ten records intermixed in any order. On completion of the last record, the pickup arm will return to a rest position on the "reject" button, and the mechanism will automatically shut off. Any record may be rejected while playing by pressing on the "reject" button.

Power supply is 110 volts, 60 cycles AC, unless otherwise indicated.

Manufactured by: **SEARS, ROEBUCK & CO.**
925 S. Homan Street • Chicago, Illinois

Parts should be ordered from the nearest Sears, Roebuck & Co. Retail Store or Mail Order Branch

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SILVERTONE
MODELS 101.761-3—101.762-3

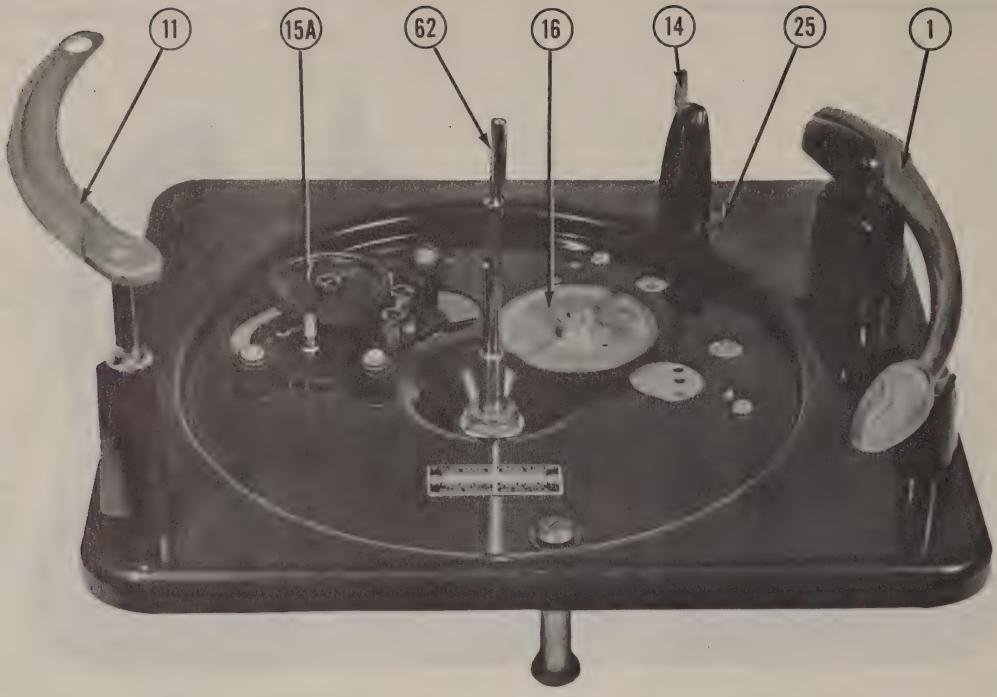

FIG. 2—TOP VIEW LESS TURNTABLE

MANUAL OPERATION

All odd-size records, warped, or home recordings should be played manually. To play records manually, the following procedure is necessary:

1. Raise the over arm (11) and swing it either direction until the pin drops into the locating groove of the record support post.
2. Place the record to be played on the spindle, allowing it to rest on the spindle step.
3. Place the record support (11) over the spindle, allowing it to come to a rest on top of the record.
4. Press down on the head of the pickup arm which is resting on the "Reject" button (17). This starts the mechanism and change cycle, dropping the record to the turntable and moving the pickup arm into its proper playing position.
5. As in home recordings which have no lead-in groove, or records which are smaller than a standard record, it will be necessary to place the needle in the first groove of the record.
6. On completion of standard records, the mechanism will be tripped, returning the pickup arm to its rest position on the "reject" button, and the mechanism will automatically shut off. In connection with records, such as home recordings, that do not have the eccentric trip grooves, the mechanism will have to be tripped by pressing on the "reject" button (17).
7. Raise and pivot the over arm (11) out of the way and remove the record by lifting straight up.

LOADING AND AUTOMATIC OPERATION

1. Pull straight up on the record support (11) until it clears the spindle.
2. Swing the record support in either direction until pin in shaft drops into locating groove.
3. Place as many as twelve 10-inch records, ten 12-inch records, or ten records intermixed, in any order, on the step of the spindle.
4. Steady records with one hand and replace record support over spindle. Gently press down on the record support until the records are held parallel with the turntable.
5. Press down on the head of the pickup arm, which is in a rest position on the reject button (17). The changer will now play the entire stack of records and will automatically shut off on completion of the last record.
6. A record may be rejected at any time while playing by pressing on the "reject" button.
7. To turn off the changer, remove any records remaining on the spindle. Press down on the "reject" button. The pickup arm will return to its rest position on the "reject" button, and the changer will shut off automatically.

CHANGE CYCLE

As the pickup arm oscillates in the eccentric groove of the record, it causes the serrated end of the ratchet lever (35), which is fastened to the pickup arm outer sleeve assembly (7), to actuate the pawl of the trip lever (50). As a result, the trip lever is moved against the hinge lever bracket (52), thus tripping the hammer lever (53). The hammer lever now pivots against the top of the locking button (66B) pushing it down. This releases the pivot lever assembly (56) bringing the cycle idler wheel (16) into a positive frictional position with the hub of the turntable, starting the change cycle.

The pinion (60), rotating with the cycle idler wheel (16), drives the cam assembly (66) through the change cycle. As the cam assembly rotates, the locking button (66B) returns to a raised position by the retaining spring (66A).

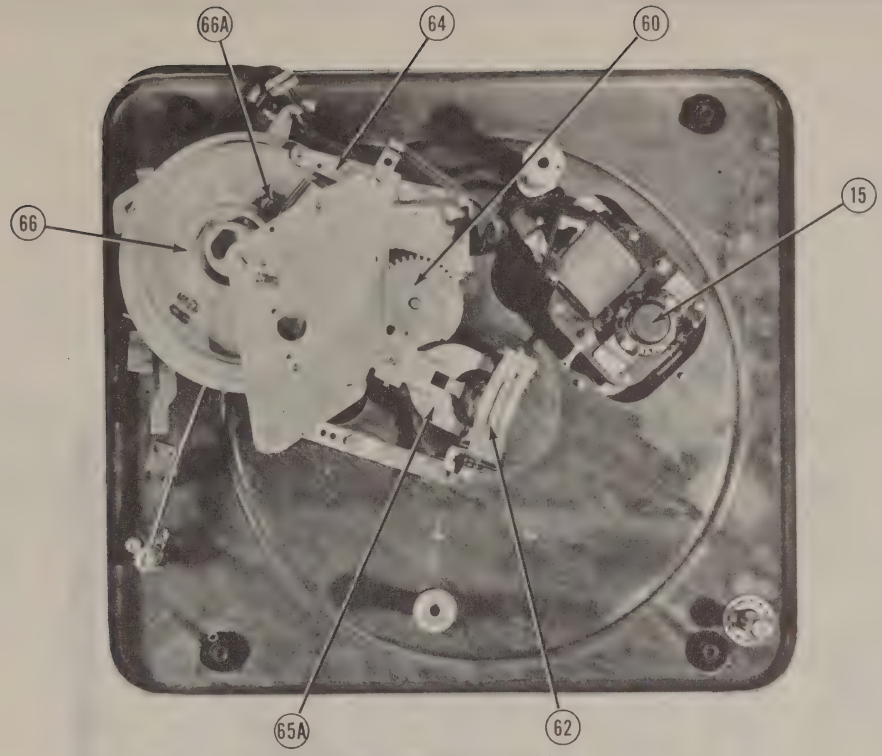

FIG. 3—BOTTOM VIEW

The arm operating shaft and lever (48) are raised due to the incline portion on the outer edge of the cam assembly. As the operating lever raises, it contacts the positioning lever (46), and, in turn, the middle sleeve assembly (42); as a result, the pickup arm is raised from the record. Also a frictional condition is set up when these parts come in contact with each other. The arm positioning lever (6), which is fastened to the other end of the operating lever, directs the movement of the outer sleeve assembly (7) and, in turn, the pickup arm; therefore, as the pin of the operating lever follows the track of the cam assembly, the pickup arm is moved outward coming to a rest on the "reject" button and clearing the records. At this point, a flange on the outside edge of the cam assembly contacts the finger of the discriminator lever (41), resetting it with the discriminator trip (14).

As the pickup arm is moving outward, the flange (A) of the cam assembly (66) moves under the hammer lever (53), resetting it with the hinge lever bracket (52).

The pin of the finger operating lever (65E), riding in the groove on the bottom of the cam, now actuates the finger operating lever, which, in turn, operates the spindle mechanism (62), thus dropping a record to the turntable.

The arm operating lever (48) now moves the pickup arm in for positioning, and the finger operating lever returns the selecting mechanism to its original position.

For 10-inch positioning, the discriminator lever (41) is held down by the step on the discriminator trip (14). This allows the positioning lever (46) to stay in contact and to move in with the operating lever (48), positioning the arm for 10-inch set down.

As a 12-inch record drops, the record strikes the discriminator trip (14). This releases the discriminator lever (41) allowing the hooked end to fall in the path of the positioning lever (46); therefore, as the arm operating lever (48) pivots the pickup arm in, the positioning lever (46), which moves with the lever (48), comes in contact with the discriminator lever (41). This prevents any further movement of the pickup arm, thus positioning the pickup arm for 12-inch set down.

The arm operating shaft and lever (48) are lowered by the inclined section of the cam, thereby lowering the pickup arm and giving it free movement to track across the record.

The cam stop lever (64), riding around the bottom edge of the cam, snaps the cam assembly into a locked position at the same time the locking button (66B) contacts the stop bracket (61) of the pivot lever (56). This moves the pivot lever away from the centerpost, thus disengaging the idler wheel (16) from the turntable hub. This completes the change cycle.

SHUT-OFF MECHANISM

The spring which is riveted on the end of the shut-off lever (65A) is responsible for holding the shut-off trip pawl (65G) away from the center of the cam (66); i.e., when pressure is applied to the spindle. When the last record drops to the turntable, pressure is released from the spindle assembly. This disengages the spring of the shut-off lever (65A) from the shut-off pawl (65G), allowing the pawl to be pulled in by the tension spring (65F).

When the mechanism is tripped, the change cycle is set in motion. The cam assembly will be rotated a half turn, moving the pickup arm out over the reject button. The shut-off button (66C) comes in contact with shut-off pawl (65G), causing the button to be raised. The pickup arm is now lowered to the "reject" button; the shut-off button (66C) moves against the switch actuating lever (36A) and the stop bracket (61) of the pivot lever assembly (56). The cam is snapped into position by the cam stop lever (64) causing the mechanism to be shut off and the disengagement of the cycle idler wheel (16) from the turntable hub.

A PHOTOFACT "EXPLODED" VIEW

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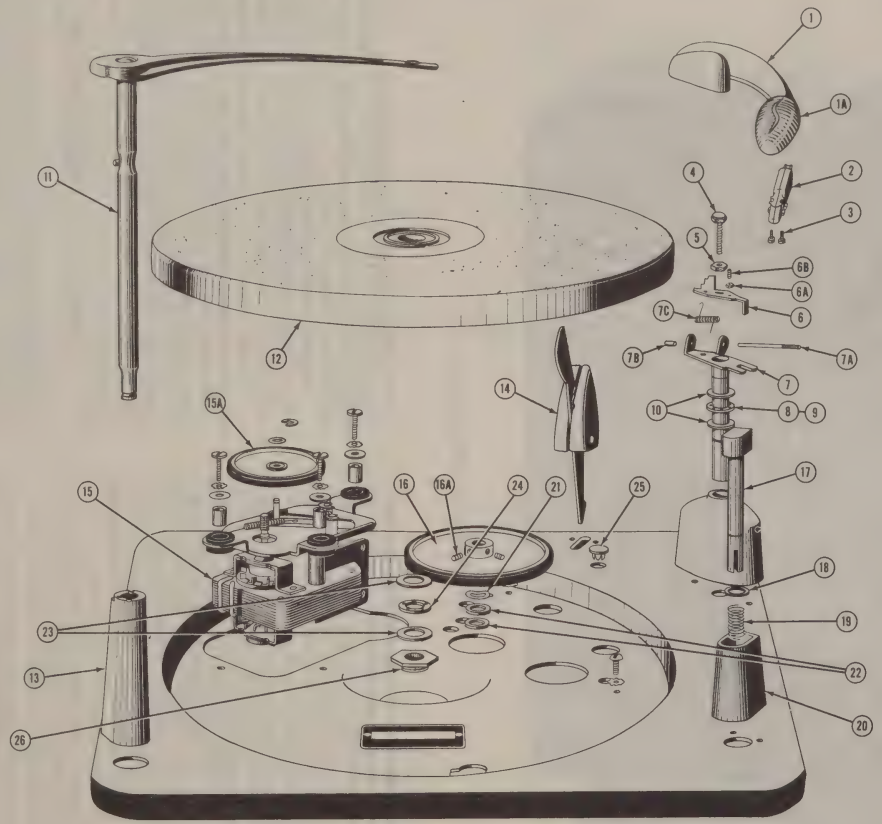

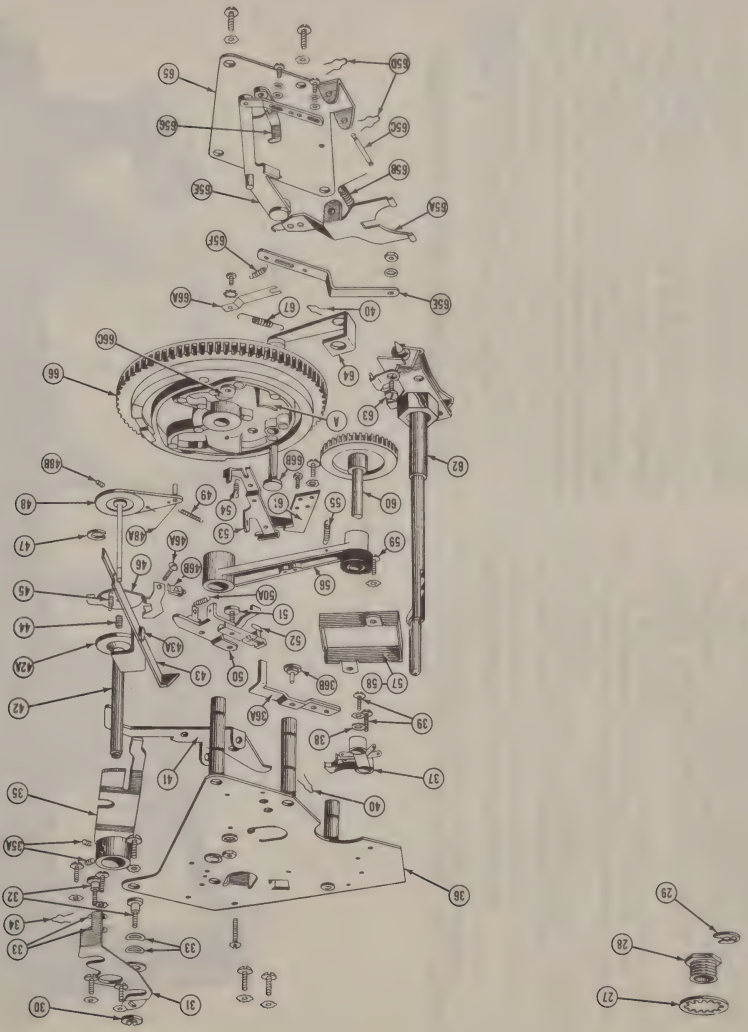
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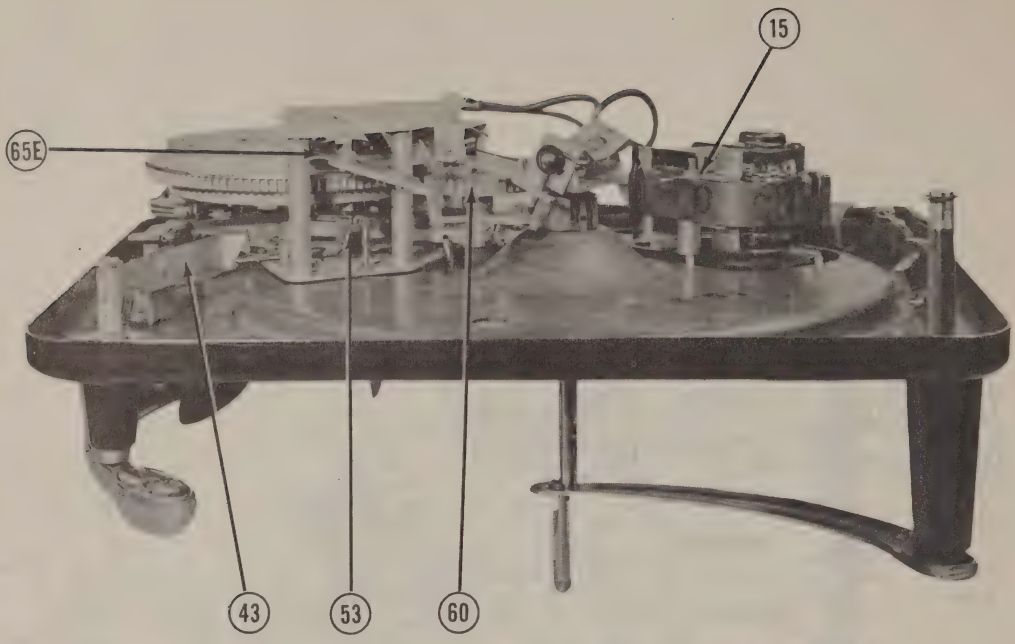

FIG. 4—FRONT VIEW

TROUBLES AND ADJUSTMENTS

Pickup Arm Does Not Move During the Change Cycle

1. Height adjusting screw (4) and nut (5) loose.

If the height adjustment nut (5) is loose, the arm positioning lever (6) may raise high enough to disengage the milled flats on the middle sleeve assembly (42). If this condition exists, the following adjustment must be made:

(a) Make sure the arm positioning lever (6) engages the milled flats on the middle sleeve assembly (42), and tighten the nut (5) enough to hold those parts in engagement.

(b) Adjust the screw (4) so that the pickup arm clears the reject button (17) by a minimum of 3/64" and just clears the flock on the turntable.

2. Arm operating lever (48) loose on shaft.

(a) With power plug out, trip the changer and rotate the turntable clockwise until the changer is in play position (out of cycle).

(b) Loosen the set screw (48B) enough so that the lever will slide on the shaft.

(c) Place a shim approximately .060 between positioning lever (46) and the middle sleeve assembly (42A).

(d) Press up on the arm operating lever (48) to its full extent of travel.

(e) Using long-nose pliers, pull down the operating shaft until it touches the cam.

(f) With continued pressure on the bottom of the arm operating lever (48) (by the left thumb), push down on the pickup arm (with the left fingers) as far as it will go. Be sure the pickup arm is clear of the reject button.

(g) Tighten the set screw and remove the shim.

(h) The pickup arm height may now be properly adjusted by the adjustment screw (4). See 1 under "Pickup Arm Does Not Move During the Change Cycle."

Needle Does Not Position Properly for 10-Inch Record

1. Proper adjustment is made by rotating the eccentric screw (30) located back of the pickup arm post on the top of the base plate.

(a) Rotate the screw clockwise or counterclockwise, until the condition is corrected.

2. If the pickup arm is irregular in dropping action, check the following:

(a) Check for grease or foreign matter between the clutch surfaces of the arm operating lever (48), positioning lever (46) and the middle sleeve assembly (42).

(b) Check the height adjusting screw (4) to see if it is tight. (See "Pickup Arm Does Not Move During the Change Cycle 1.")

(c) The arm operating lever (48) loose on the shaft. (See "Pickup Arm Does Not Move During the Change Cycle 2.")

Needle Does Not Position Properly for 12-Inch Record

1. Proper adjustment is made by the adjusting screw (46A) of the positioning lever (46).

(a) Rotate the screw clockwise or counterclockwise until the condition is corrected.

2. If the pickup arm is irregular in dropping action, check the following.

(a) Check for grease or foreign matter between the clutch surfaces of the arm operating lever (48), positioning lever (46), and the middle sleeve assembly (42).

(b) Check the height adjusting screw (4) to see if it is tight. (See "Pickup Arm Does Not Move During the Change Cycle—1.")

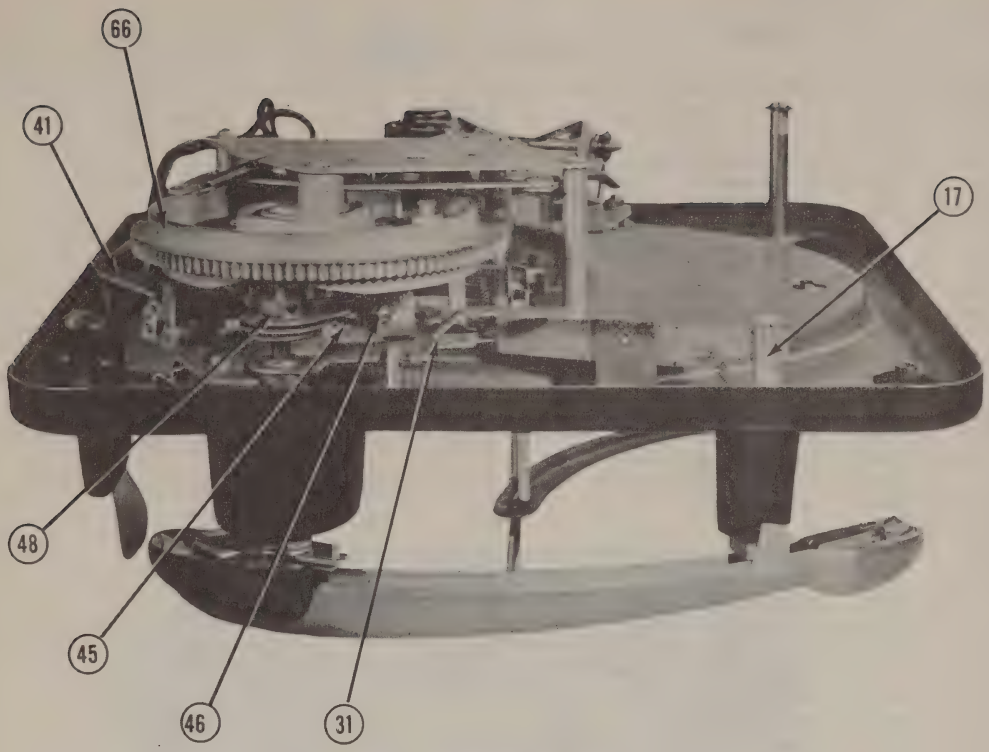

FIG. 5—RIGHT SIDE VIEW

(c) The arm operating lever (48) loose on the shaft. (See "Pickup Arm Does Not Move During the Change Cycle—2.")

Changer Cycles Continuously

1. Button retaining spring (66A) loose or too weak to actuate the locking button (66B).
2. Reject button (17) binding.
3. Hinge lever bracket (52) binding.
4. Hammer lever (53) not being reset with the hinge lever bracket (52).

Pickup Arm Does Not Drop for 12-Inch Record

1. Discriminator lever (41) bent. Not contacting the flange on the positioning lever (46).
2. The discriminator lever out of adjustment.
   (a) With power plug out, trip the changer and rotate the turntable until the pickup arm raises.
   (b) Push back on the discriminator trip (14).
   (c) Remove the plug button (25).
   (d) Adjust the screw until the discriminator lever will approximately strike the center of the flange of the positioning lever (46).
   (e) Tighten the lock nut.
   (f) Replace the plug button.
   (g) Check the adjustment.

Changer Stalls During the Change Cycle But Turntable Continues to Rotate

1. Grease, or foreign matter, on the turntable hub and cycle idler wheel (16). Clean with alcohol or naphtha.

Turntable Speed Irregular

1. Grease, or foreign matter, on the turntable rim idler pulley (15A). Clean with alcohol or naphtha.

Changer Shuts Off Before All the Records Have Been Played

1. The spring catch on the end of the shut-off lever (65A) bent and will not hold the shut-off pawl lever (65G) away from the center of the cam.
   (a) Bend the shutoff lever (65A) spring up slightly and check the adjustment.

Changer Fails to Shut Off on Completion of Last Record

1. Spring finger on the shut-off lever (65A) bent up too far holding the shut-off pawl (65G) in a locked position.
   (a) Bend down slightly.
2. Spindle assembly binding preventing the spindle from having any vertical movement.

LUBRICATION

These changers are lubricated at the factory and should not require any additional lubrication; however, should it become necessary to lubricate the changer, due to excessive use or high operating temperatures, the changer should be lubricated as follows:

Use a good, light grease on the

1. Bearing assembly (24).
2. Spindle assembly (62).
3. Cam assembly (66).

Do not allow any grease to come in contact with the clutch surfaces of the middle sleeve assembly (42), positioner lever (46), the arm operating lever (66), the rubber tires of the idler pulley (15A), and the cycle idler wheel (16) and their drive surface. If grease should come in contact with these parts, clean them with alcohol or naphtha.

PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	55194	Arm—pickup (with decorative cap)
1A	57584	Cap—decorative
2	65101	Pickup cartridge—syntronic (grounded) (101.761-3) (101.762-4)
2	65100	Pickup cartridge—syntronic (ungrounded) (101.762-3)
3	57888	Screw—syntronic pickup attaching
4	57447	Screw—No. 8-32 special
5	410-8	Nut—No. 8-32 hex.
6	65347	Arm positioning lever assy.
6A	410-4	Nut—No. 4-40 hex.
6B	372-8	Screw—No. 4-40 x ¼ lg. headless set
7	67591	Outer sleeve assembly—pickup arm
7A	57682	Sleeve assy.—pickup arm
7B	57681	Sleeve assembly—hinge pin
7C	57813	Spring—hinge
8	57643	Cage—ball
9	63981	Ball—.0625 diameter (7 used)
10	57644	Washer—flat—balls retaining
11	57845	Record support assembly
12	57821	Turntable assy.
13	57870	Post—record support
14	57816	Post assembly—discriminator
15	57473	Motor—Russell—60 cycle—117 v.
15A	49655	Pulley—idler
16	57424	Wheel assy.—idler
16A	374-6	Screw—set—No. 8-32 x 3/16
17	57807	Button assy.—reject
18	4536	Washer—flat
19	57445	Spring—button post
20	57478	Post—reject button
21	60439	Washer—spring
22	8003	Washer—flat
23	57382	Washer—hardened—flat
24	57448	Bearing assy.
25	57665	Button—plug
26	57835	Screw—spindle mounting
27	402-26	Washer—lock 9/16 int. tooth
28	57865	Screw—post mounting
29	13335	Washer—"C"—retaining
30	57484	Eccentric—adjusting
31	57486	Lever—adjusting
32	57485	Screw—No. 6-32 shouldered
33	57487	Washer—spring
34	57446	Clip—retaining
35	57808	Lever assy.—ratchet
35A	374-6	Screw—set—No. 8-32 x 3/16
36	67096	Top plate and spacers assembly
36A	57422	Switch actuating assy.
36B	57479	Rivet—shouldered
37	57405	Switch—on-off
38	913	Washer—flat
39	202-7	Screw—No. 4-40 x 7/16
40	57446	Clip—retaining
41	57677	Lever—discriminator
42	57683	Middle sleeve assy.—pickup arm
42A	57667	Washer—mopreme
43	57895	Lever—manual trip
43A	57479	Rivet—shouldered
44	57814	Spring—compression
45	57598	Spring—tension
46	57669	Lever assy.—positioning
46A	203-6	Screw No. 6-32 x ⅜
46B	61790	Nut—speed No. 6-32
47	13335	Washer—"C" retaining
48	57668	Arm operating lever assy. (complete)
48A	57666	Spring—positioning lever
48B	372-8	Screw—No. 4-40 x ¼ headless
49	57606	Spring—arm operating lever
50	57423	Hinge trip lever assy.
50A	57600	Spring—ratchet pawl
51	57383	Screw—No. 4-40 x ¼ long—fil. hd.
52	57631	Hinge lever bracket assy.
53	57371	Lever—hammer
54	57601	Spring—hammer lever
55	57602	Spring—pivot lever
56	57630	Pivot lever assy.
57	57401	Cover—switch
58	57831	Insulator—paper
59	65185	Screw—No. 4-40 x 3/16
60	57825	Pinion assy.
61	57394	Bracket—stop
62	57858	Spindle assy. (complete)
63	57376	Screw—No. 6-32 shouldered
64	57416	Cam stop lever assy.
65	57879	Bottom plate assy.
65A	57418	Shutoff lever assy.
65B	57884	Spring shutoff lever
65C	57353	Pin—shutoff lever
65D	16503	Clip—retaining
65E	57882	Finger operating lever assy.
65F	57598	Spring tension
65G	57897	Pawl—shutoff trip
66	57899	Cam assy.
66A	57411	Spring—button retaining
66B	57414	Button—locking
67	57609	Spring—cam stop lever
	57694	Pad—rest—pickup arm
	56696	Lead—pickup shielded
	60493	Ball—.125 dia.—cam assy.
	57597	Spring—shutoff button retaining—cam assy.
	57927	Bottom pan assy. (101.761-3)
	66243	Slide—record changer (101.761-3)
	65120	Bumper (101.761-3)
	63589	Spacer—knob (101.761-3)
	57349	Knob—bottom pan (101.761-3)
	65555	Cover—knob (101.761-3)
	57572	Spring—compression—chgr. mtg.
	57611	Cord—line
	57272	Plug—1 prong—phono
	57569	Spacer—shipping (101.761-3)
	56696	Lead—pickup—cotton overbraid (101.762-3)
	57641	Lead—pickup—(101.761-3)

PHOTOFACT* Folder

TELE-TONE
MODEL TV-170

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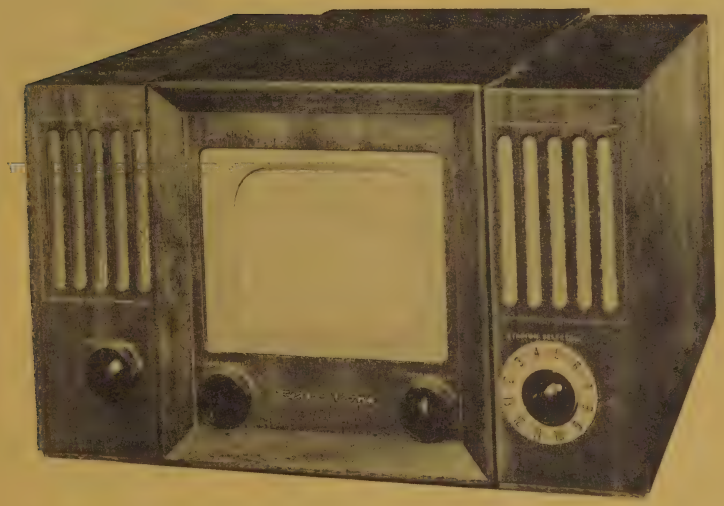

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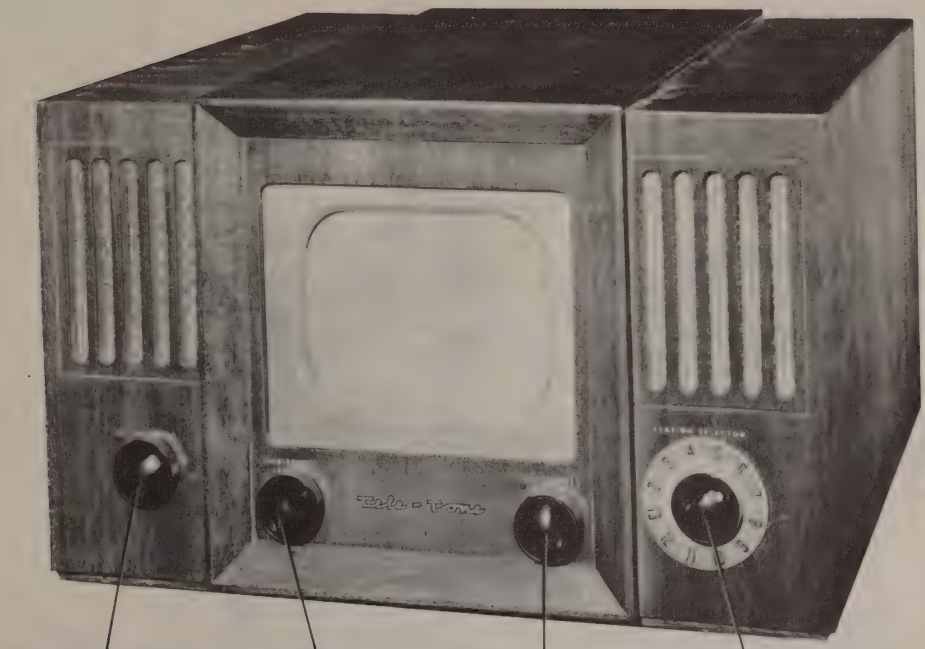

TELE-TONE
MODEL TV-170

TRADE NAME	Tele-Tone Model TV-170
MANUFACTURER	Tele-Tone Radio Co., 540 W. 58th St. New York 19, New York
TYPE SET	Television Receiver
TUBES	Twenty Two
POWER SUPPLY	105-125 Volts AC-DC
RATING:	.93 Amp. at 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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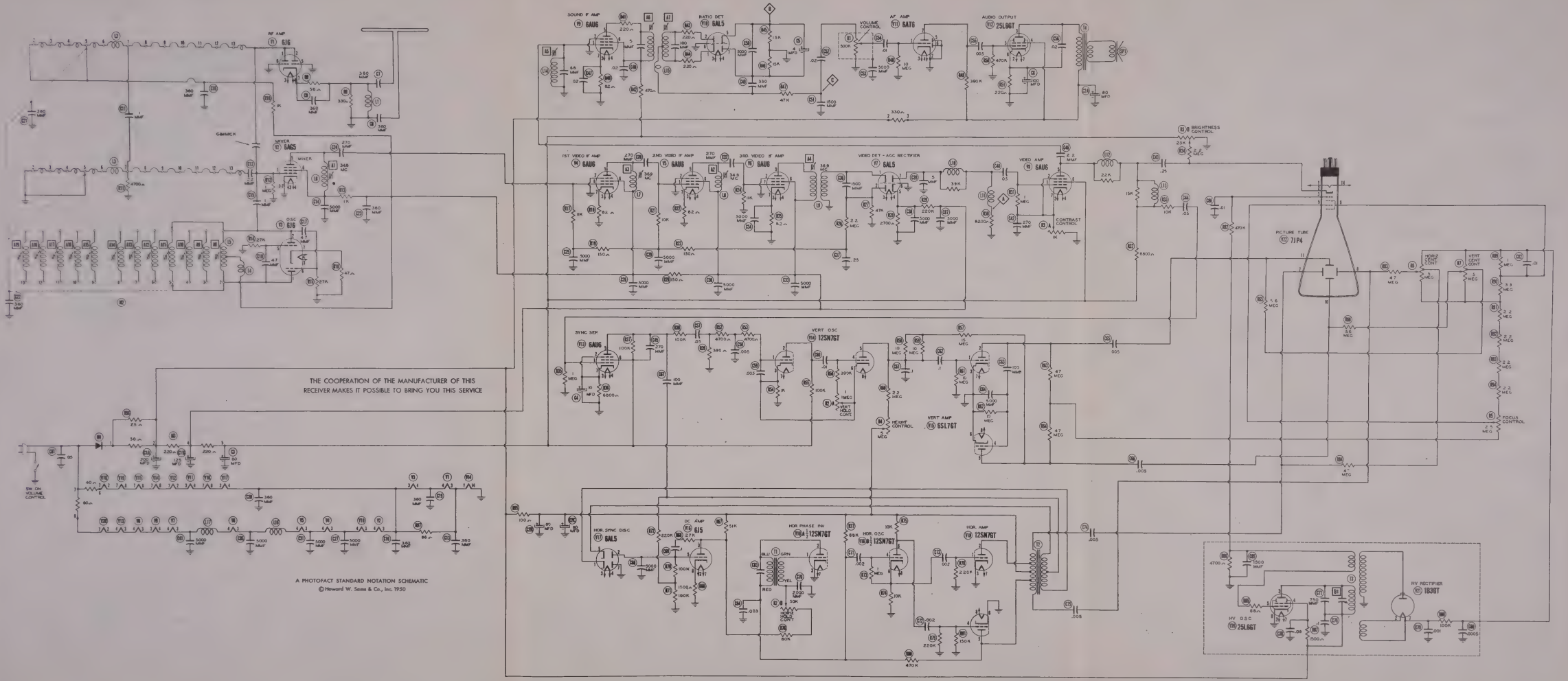
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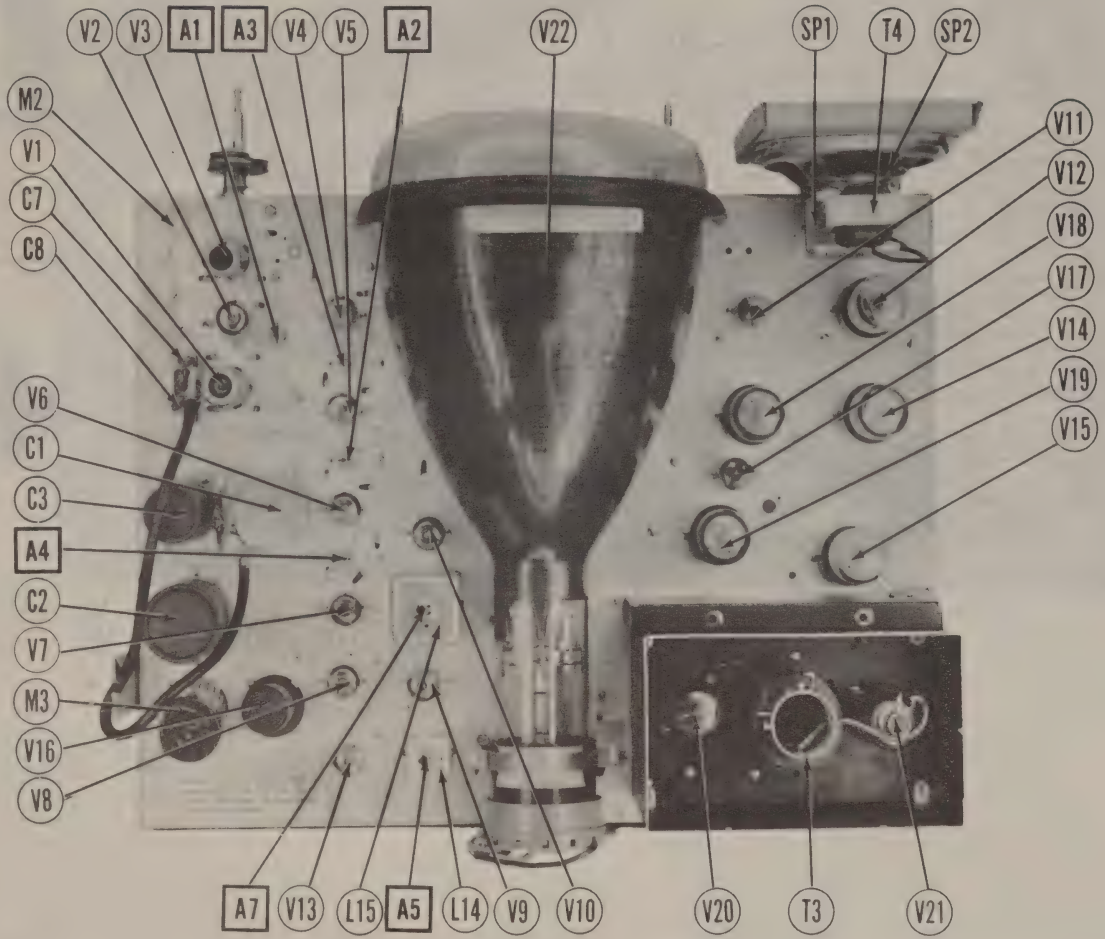
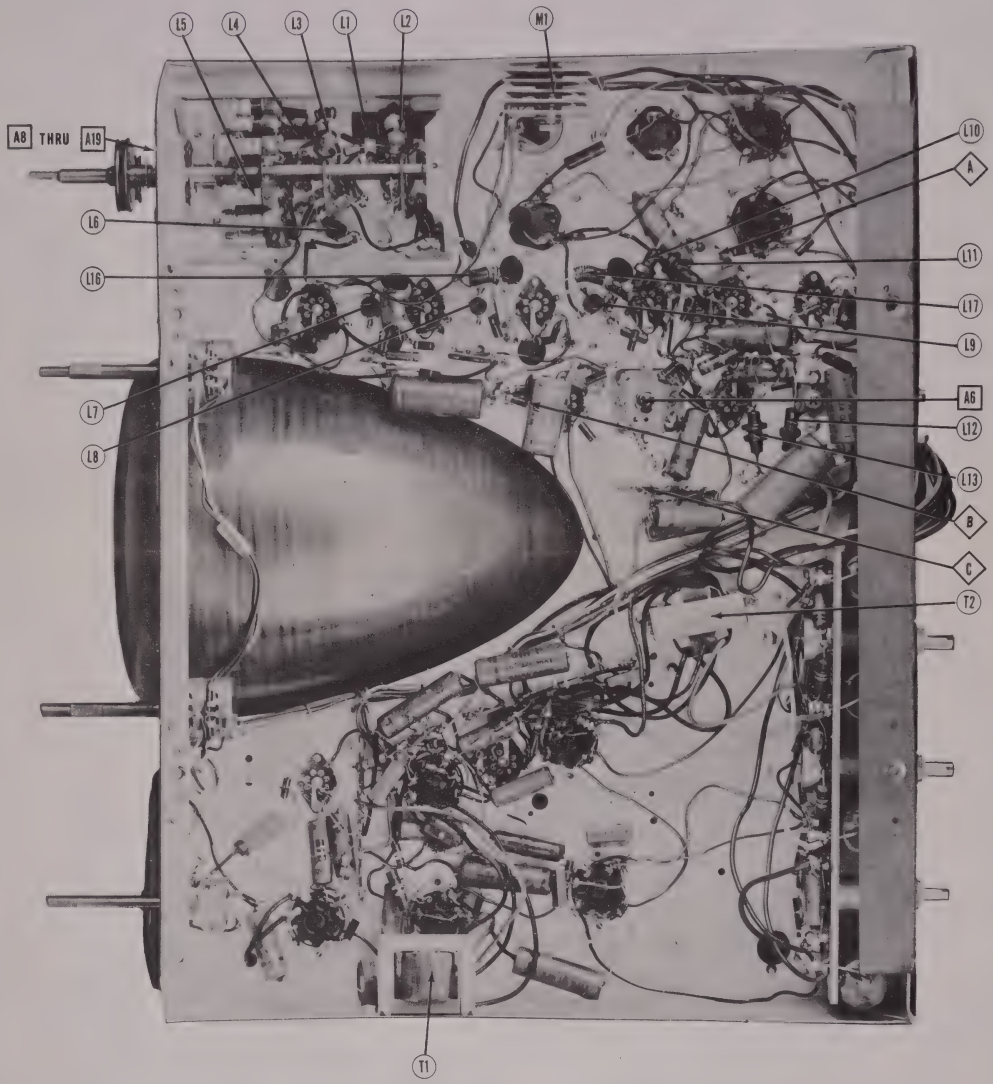
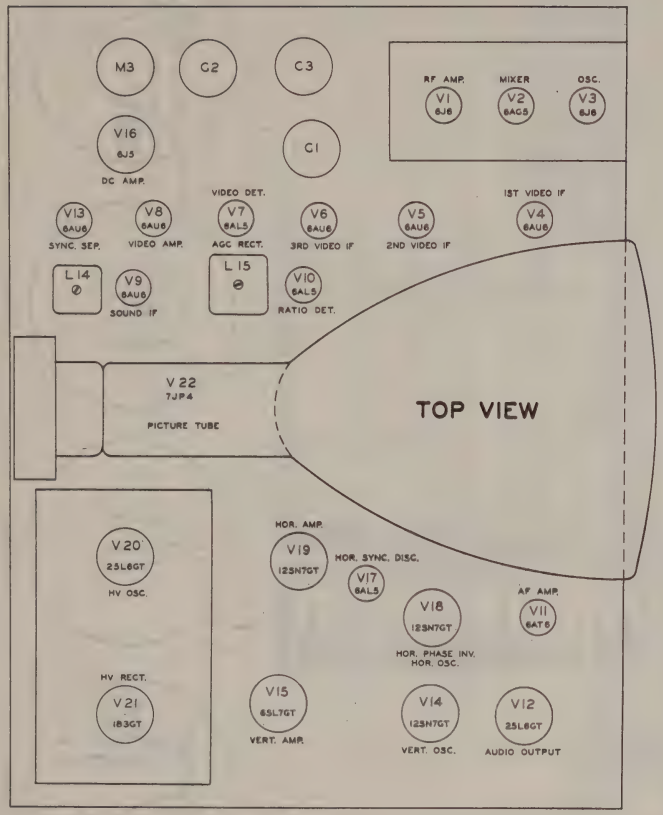
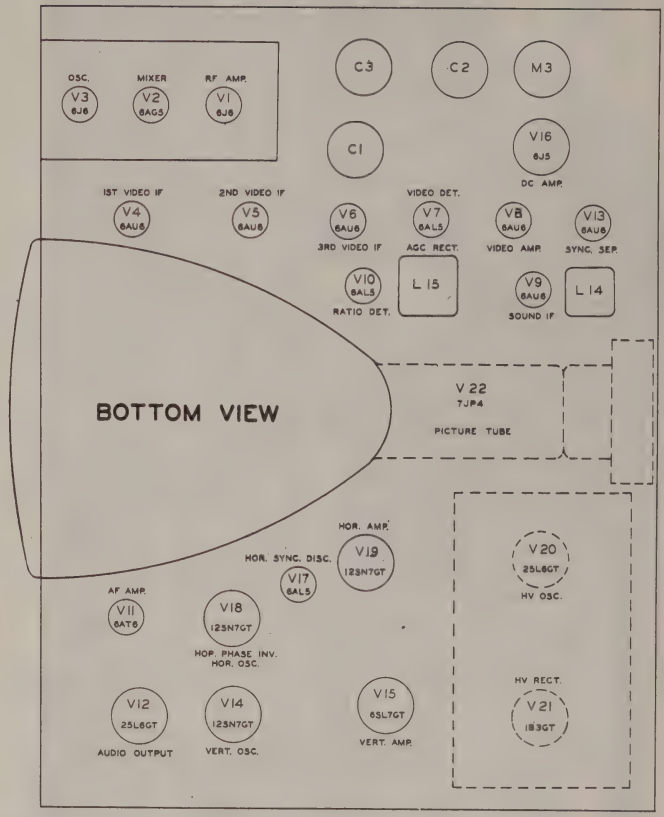


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If the picture tube is removed during alignment, short pins 1 and 14 of the picture tube socket to complete the filament circuit. Use an isolation transformer to protect the test equipment.

VIDEO IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	34.8MC (Unmod.)	Any	DC Probe and common leads across R30.	A1, A2	Adjust for maximum deflection.
2.	Direct	"	36.9MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. Set the channel switch to any channel where interference from the local oscillator is minimum. To check for erroneous indications turn the fine tuning control; if the pattern on the scope changes, switch to another channel.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	35MC (10MC SWP)	32.6MC 34.8MC 36.9MC 37.3MC	See note above	Vert. Amp. to Point (A) Low side to chassis.		Check for response curve similar to Fig 1 with proper marker placement. If necessary retouch A1 and A2 to correct the low frequency end, and A3 and A4 to correct the high frequency end of the response curve.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 1 (Grid) of 6AU6 (V8). Low side to chassis.	4.5MC (Unmod.)	Any channel unused locally.	DC Probe to Point (B) Common to chassis.	A5, A6	Adjust for maximum deflection.
5.	.01MFD	"	"	"	DC Probe to Point C. Common to chassis.	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ~ modulation and 450KC sweep. Use 120 ~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 1 (Grid) of 6AU6 (V8). Low side to chassis.	4.5MC (1MC SWP)	4.5MC	Any channel unused locally.	Vert. Amp. to Point (B) Low side to chassis.	A5, A6	Adjust for maximum amplitude and symmetry as per Fig 2.
5.	.01MFD	"	"	"	"	Vert. Amp. to Point (C) Low side to chassis.	A7	Adjust A7 so 4.5MC occurs at center of crossover lines as per Fig 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

The RF and mixer circuits in this tuner are pre-set at the factory and are very stable and normally should not require adjustment in the field. Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to center conductor of antenna input cable. Low side to outer shield.	57MC (10MC SWP)	55.25MC 59.75MC	2	Vert. Amp. to Point (A) Low side to chassis.	A8	Adjust to place sound marker as shown in Fig 4. The video marker should fall between 45 and 60% on opposite side of response curve. If the video marker does not fall within the proper range on ALL channels, switch to channel 6 and make slight adjustments of video IF coils A1, A2, A3 and A4 to obtain proper results.
			63MC (10MC SWP)	61.25MC 65.75MC	3		A9	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A10	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A11	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A12	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A13	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A14	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A15	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A16	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A17	
			207MC (10MC SWP)	205.25MC 209.75MC	12		A18	
			213MC (10MC SWP)	211.25MC 215.75MC	13		A19	

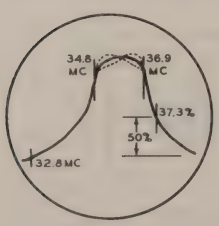


FIG. 1

FIG. 2

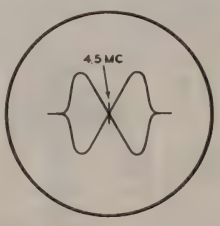


FIG. 3

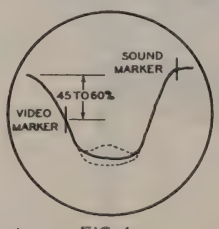
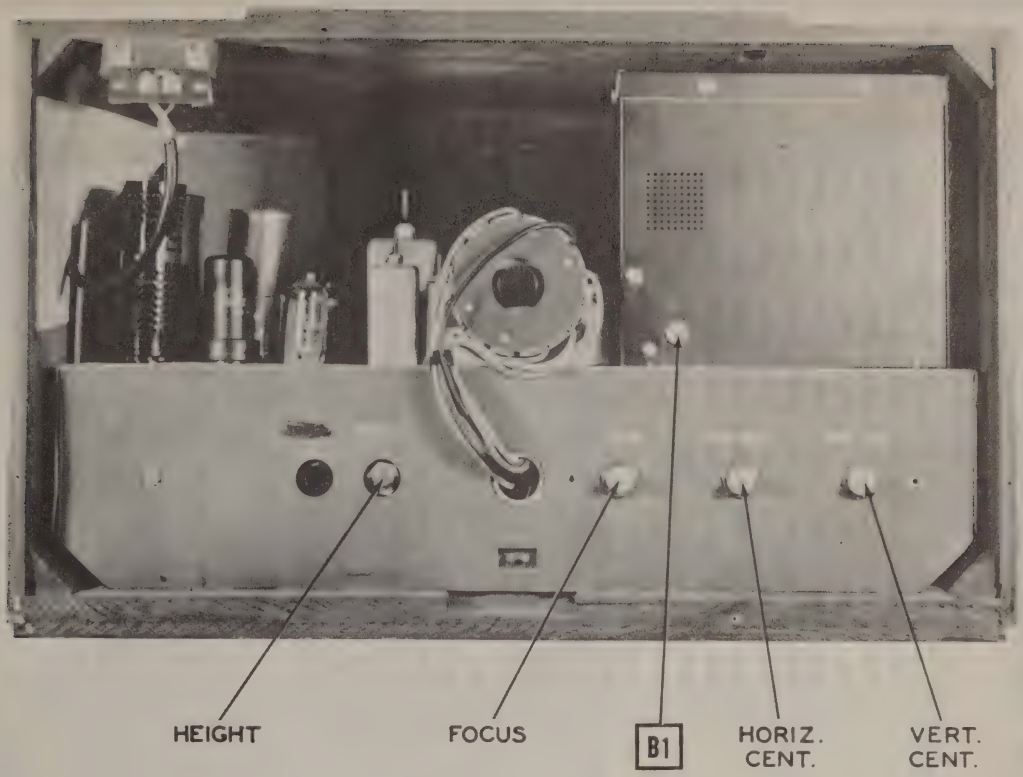


FIG. 4



CABINET–REAR VIEW

PICTURE SIZE ADJUSTMENT

The picture size trimmer (B1) which controls the high voltage is located in the high voltage power supply compartment and is used to adjust the picture to the proper horizontal width. Due to the interaction between the circuits, it will be necessary to adjust the height control when B1 is changed.

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove six screws holding rear cover. Remove cover.
3. Loosen two screws holding antenna terminal strip. Remove terminal strip.
4. Remove four 5/16" hex head bolts holding chassis. Remove chassis.

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	85VDC	85VDC	6VAC	12VAC	0V	0V	.7VDC		
V 2	6AG5	-1VDC	0V	32VAC	45VAC	100VDC	100VDC	0V		
V 3	6J6	100VDC	100VDC	19VAC	12VAC	§-3.1VDC	§-3.8VDC	.4VDC		
V 4	6AU6	-.1VDC	0V	32VAC	38VAC	100VDC	100VDC	.6VDC		
V 5	6AU6	-.1VDC	0V	38VAC	45VAC	105VDC	105VDC	.7VDC		
V 6	6AU6	0V	0V	45VAC	50VAC	105VDC	105VDC	.8VDC		
V 7	6AL5	0V	0V	50VAC	55VAC	1.3VDC	0V	-.1VDC		
V 8	6AU6	.4VDC	8.7VDC	60VAC	66VAC	60VDC	100VDC	8.7VDC		
V 9	6AU6	0V	0V	60VAC	55VAC	100VDC	100VDC	.6VDC		
V 10	6AL5	0V	0V	25VAC	31VAC	.4VDC	0V	-.3VDC		
V 11	6AT6	-.4VDC	0V	44VAC	38VAC	0V	0V	45VDC		
V 12	25L6GT	0V	44VAC	100VDC	112VDC	0V	0V	65VAC	8.8VDC	
V 13	6AU6	0V	3.1VDC	66VDC	73VAC	65VDC	100VDC	3.1VDC		
V 14	12SN7GT	0V	25VDC	.8VDC	-1.1VDC	2.7VDC	.8VDC	77VAC	65VAC	
V 15	6SL7GT	-1.8VDC	175VDC	0V	-.6VDC	185VDC	0V	85VAC	77VAC	
V 16	6J5	0V	97VAC	50VDC	0V	-.5VDC	0V	104VAC	0V	
V 17	6AL5	.8VDC	-.5VDC	25VAC	19VAC	1.8VDC	0V	0V		
V 18	12SN7GT	-3.2VDC	22VDC	0V	12VDC	90VDC	30VDC	38VAC	25VAC	
V 19	12SN7GT	-2.7VDC	120VDC	0V	-1.7VDC	120VDC	0V	97VAC	85VAC	
V 20	25L6GT	0V	73VAC	125VDC	105VDC	-20VDC	125VDC	40VAC	0V	
V 21	1B3GT	* DO NOT MEASURE								

PINS		1	2	3	5	7	8	9	10	11	14
V22	7JP4	6VAC	70VDC	-17VDC	*	*	*	*	*	*	0V

§ TAKEN WITH VACUUM TUBE VOLTMETER

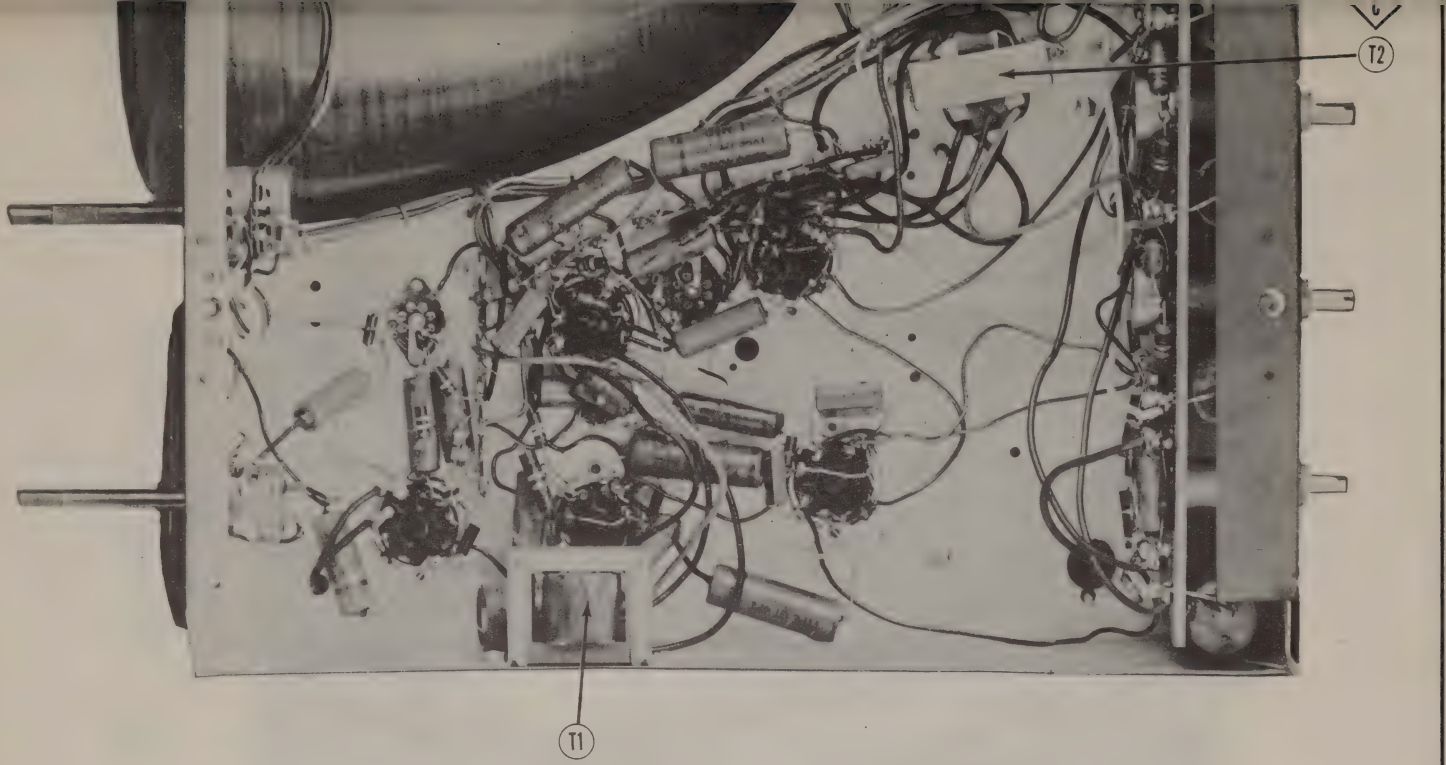
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†1.4KΩ	†1.4KΩ	1.5Ω	4Ω	0Ω	0Ω	56Ω		
V 2	6AG5	1 Meg.	0Ω	6Ω	11Ω	†1.4KΩ	†1.4KΩ	0Ω		
V 3	6J6	†380Ω	†380Ω	7Ω	4Ω	27KΩ	27KΩ	47Ω		
V 4	6AU6	2.2 Meg.	0Ω	15Ω	19Ω	†380Ω	†380Ω	82Ω		
V 5	6AU6	2.2 Meg.	0Ω	19Ω	23Ω	†230Ω	†230Ω	82Ω		
V 6	6AU6	11KΩ	0Ω	23Ω	26Ω	†230Ω	†230Ω	82Ω		
V 7	6AL5	.1Ω	47KΩ	26Ω	30Ω	2.7KΩ	0Ω	8.2KΩ		
V 8	6AU6	1 Meg.	1000Ω	32Ω	36Ω	†7.3KΩ	†450Ω	1000Ω		
V 9	6AU6	1Ω	0Ω	34Ω	30Ω	†1.2KΩ	†900Ω	82Ω		
V 10	6AL5	Inf.	Inf.	1IΩ	15Ω	15KΩ	0Ω	15KΩ		
V 11	6AT6	10 Meg.	0Ω	23Ω	19Ω	0Ω	0Ω	†390KΩ		
V 12	25L6GT	Inf.	23Ω	†600Ω	†340Ω	470KΩ	Inf.	32Ω	220Ω	
V 13	6AU6	1 Meg.	6.8KΩ	36Ω	40Ω	†100KΩ	†450Ω	6.8KΩ		
V 14	12SN7GT	9KΩ	†100KΩ	1000Ω	400KΩ	†5 Meg. †2 Meg.	1000Ω	38Ω	32Ω	
V 15	6SL7GT	10 Meg.	30 Meg.	0Ω	10 Meg.	20 Meg.	0Ω	40Ω	38Ω	
V 16	6J5	0Ω	44Ω	†50KΩ	Inf.	200KΩ	Inf.	47Ω	1.5KΩ	
V 17	6AL5	320KΩ	200KΩ	1IΩ	7Ω	320KΩ	Inf.	0Ω		
V 18	12SN7GT	†150KΩ	†60KΩ	0Ω	1 Meg.	†10KΩ	10KΩ	19Ω	11Ω	
V 19	12SN7GT	220KΩ	†320Ω	0Ω	95KΩ	†310Ω	0Ω	42Ω	40Ω	
V 20	25L6GT	Inf.	40Ω	†17Ω	†1.5KΩ	4.7KΩ	†16Ω	65Ω	0Ω	
V 21	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP 750Ω

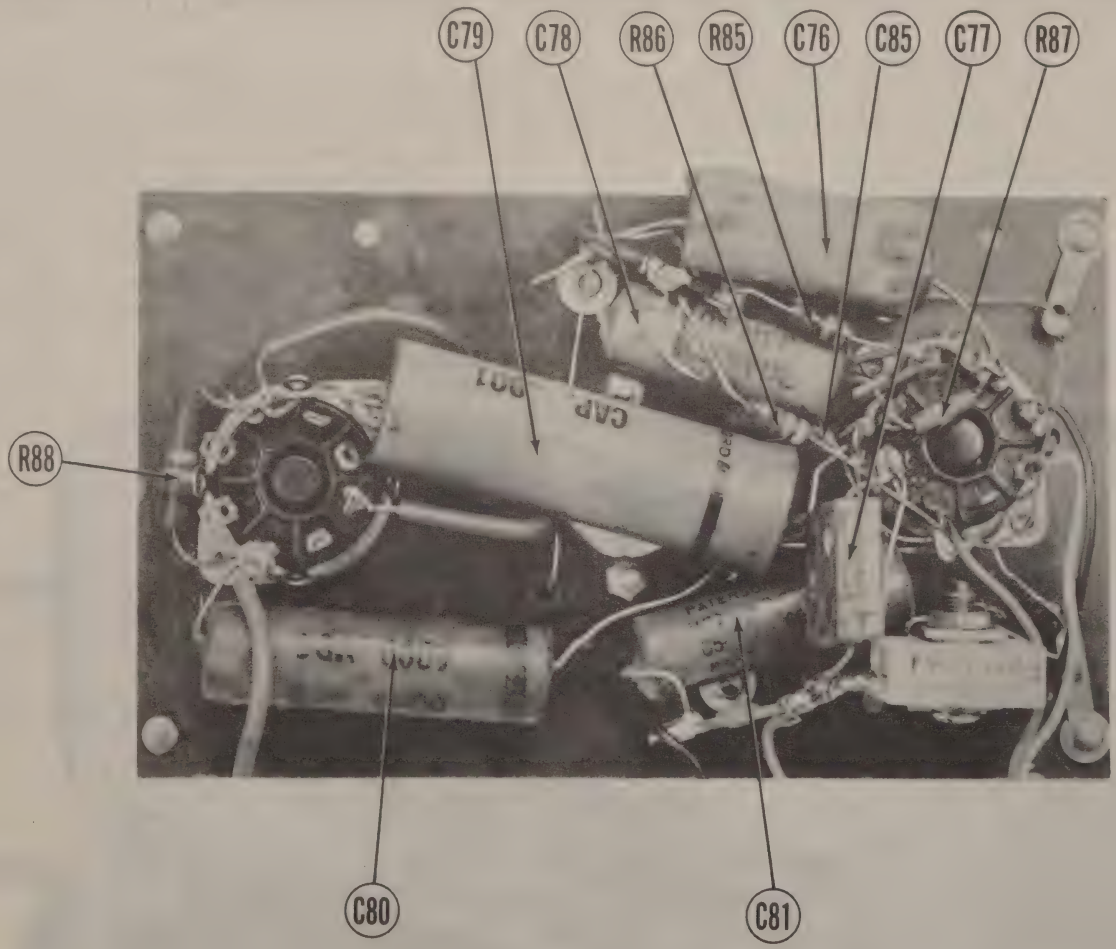
PINS		1	2	3	5	7	8	9	10	11	14
V22	7JP4	1.5Ω	2.2 Meg.	470KΩ	30 Meg.	50 Meg.	50 Meg.	40 Meg.	45 Meg.	50 Meg.	0Ω

† MEASURED FROM OUTPUT OF M1

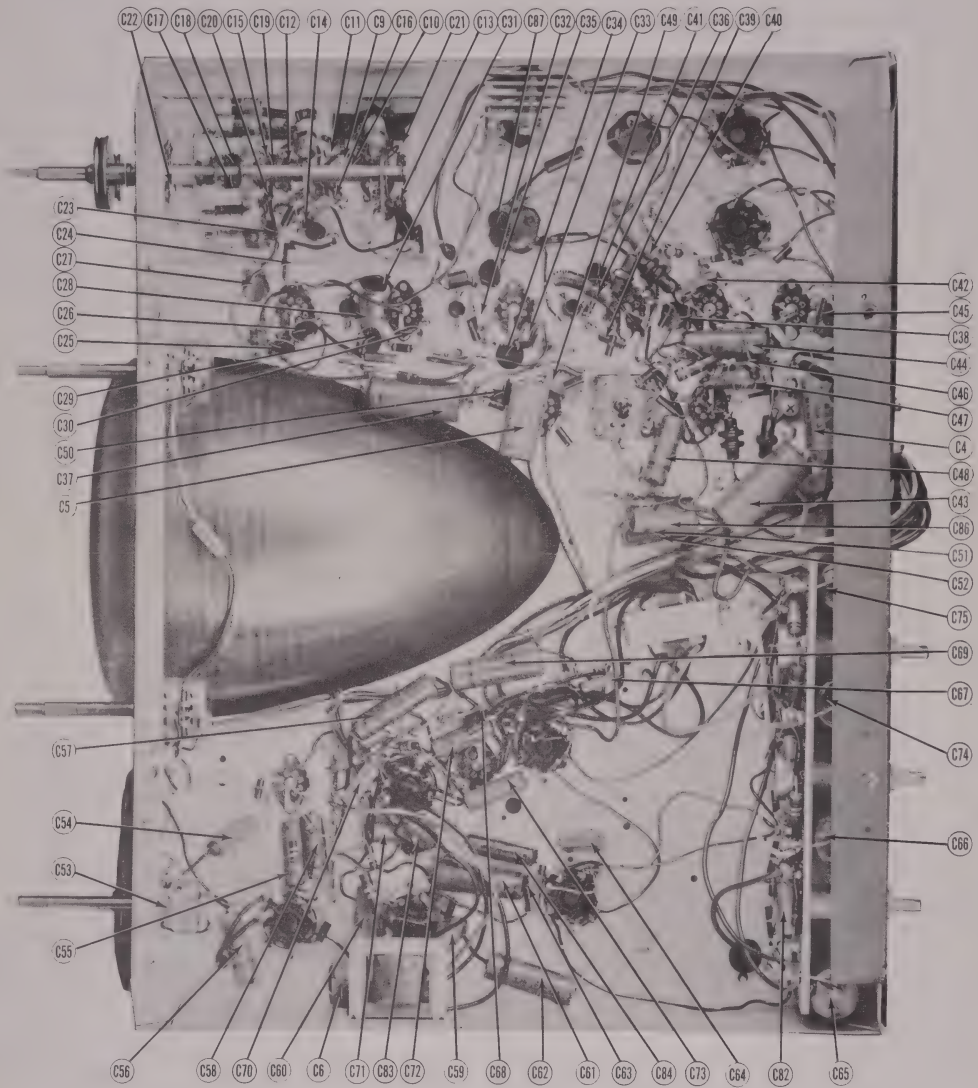
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



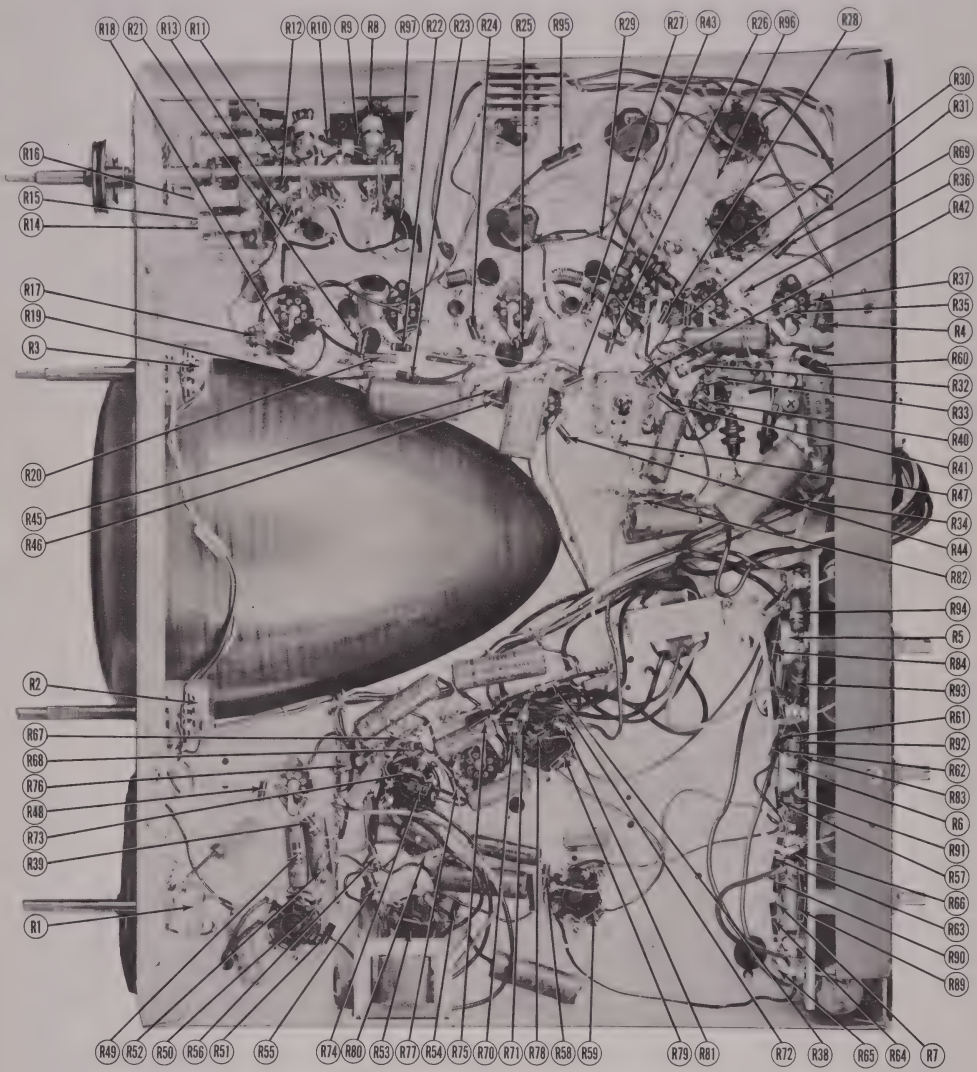
CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



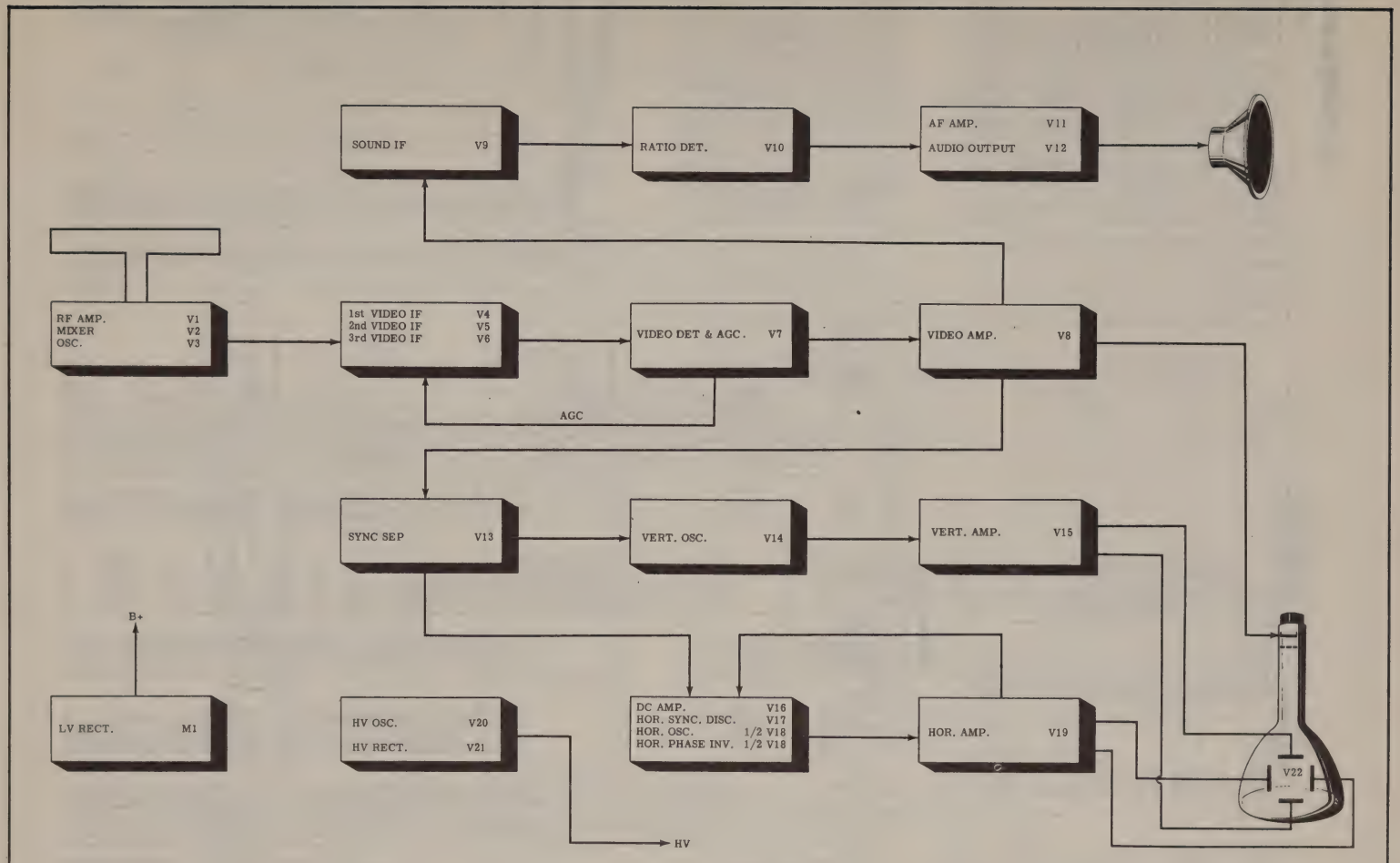
HIGH VOLTAGE SUPPLY - BOTTOM VIEW



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



BLOCK DIAGRAM

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6J6	6J6	7BF	
V2	Mixer	6AG5	6AG5	7BD	
V3	Oscillator	6J6	6J6	7BF	
V4	1st Video IF	6AU6	6AU6	7BK	
V5	2nd Video IF	6AU6	6AU6	7BK	
V6	3rd Video IF	6AU6	6AU6	7BK	
V7	Video Det.-AGC Rectifier	6AL5	6AL5	6BT	
V8	Video Amp.	6AU6	6AU6	7BK	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Det.	6AL5	6AL5	6BT	
V11	AF Amp.	6AT6	6AT6	7BT	
V12	Audio Output	25L6GT	25L6GT	7AC	
V13	Sync. Sep.	6AU6	6AU6	7BK	
V14	Vert. Osc.	12SN7GT	12SN7GT	8BD	
V15	Vert. Amp.	6SL7GT	6SL7GT	8BD	
V16	DC Amp.	6J5	6J5	6Q	
V17	Hor. Sync. Disc.	6AL5	6AL5	6BT	
V18	Hor. Osc.-Phase Inverter	12SN7GT	12SN7GT	8BD	
V19	Hor. Amp.	12SN7GT	12SN7GT	8BD	
V20	HV Osc.	25L6GT	25L6GT	7AC	
V21	HV Rectifier	1B3GT	1B3GT	3C	
V22	Picture Tube	7JP4	7JP4	14G	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	200	150	TCE-100	AF4025D	UP1IBJ			▲ Filter
B	125	150			1055			▲ Filter
C2A	80	150	TCE-131	AF161616D	UP1ICJ			▲ Filter
B	80	150			1043			■ Filter
C	80	150						▲ Filter
C3	80	150	TCE-127	AF16D	UP8015		TVL-1	Filter
C4	10	25		PRS25/10	BR102A		TVA-5	Sync. Sep. Cath. Bypass
C5	4	50	TCE-104	PRS150/4	BR550		TVA-13	Stabilizing Cap.
C6	100	25		PRS25/100	BRH251A		TVA-8	Output Cathode Bypass
C7	360		TCC-361-10			GP2K-390		Ant. Coupling
C8	360		TCC-361-10			GP2K-390		Ant. Coupling
C9	360		TCC-361-10			GP2K-390		RF Cathode Bypass
C10	360		TCC-361-10			GP2K-390		RF Plate Decoupling
C11	1		TCC-010-11					RF Coupling
C12	22		TCC-22-12			GP1K-22		RF Coupling
C13	360		TCC-361-10			GP2K-390		RF Filament Bypass
C14	5000		TCC-502SP			811-005	29C1	Mixer Decoupling
C15	1		TCC-010-11					Osc. Coupling
C16	360		TCC-361-10			GP2K-390		Mixer Filament Bypass
C17	4.7		TCC-4.7-11			NPOK-4.7		Osc. Feedback
C18	4.7		TCC-4.7-11			NPOK-4.7		Osc. Feedback
C19	360		TCC-361-10			GP2K-390		Osc. Filament Bypass
C20	360		TCC-361-10			GP2K-390		Osc. Filament Bypass
C21	360		TCC-361-10			GP2K-390		Switch Bypass
C22	360		TCC-361-10			GP2K-390		Switch Bypass
C23	360		TCC-361-10			GP2K-390		RF Bypass
C24	270	1000	TCM-271-13	1468-00025	5W5T25	GP2K-270	1FM-325	IF Coupling
C25	5000		TCC-502SP	1467-005	1D5D5	811-005	29C1	AGC Filter
C26	5000		TCC-502SP	1467-005	1D5D5	811-005	29C1	RF Bypass
C27	5000		TCC-502SP	1467-005	1D5D5	811-005	29C1	1st V. IF Fil. Bypass
C28	270	1000	TCM-271-13	1468-00025	5W5T25	GP2K-270	1FM-325	IF Coupling
C29	5000		TCC-502SP	1467-005	1D5D5	811-005	29C1	AGC Filter
C30	5000		TCC-502SP	1467-005	1D5D5	811-005	29C1	RF Bypass
C31	5000		TCC-502SP	1467-005	1D5D5	811-005	29C1	2nd V. IF Fil. Bypass
C32	270	1000	TCM-271-13	1468-00025	5W5T25	GP2K-270	1FM-325	IF Coupling
C33	5000		TCC-502SP	1467-005	1D5D5	811-005	29C1	RF Bypass
C34	5000		TCC-502SP	1467-005	1D5D5	811-005	29C1	3rd V. IF Cathode Bypass
C35	5000		TCC-502SP	1467-005	1D5D5	811-005	29C1	3rd V. IF Filament Bypass
C36	1500		TCC-152-10	1467-0015	IW5D15	GP2L-0015	1FM-215	IF Coupling
C37	.25	200	TCP-254-1	P488-25	GT2P25		TC-2	AGC Filter
C38	5000		TCC-502SP	1467-005	1D5D5	811-005	29C1	DAGC Decoupling
C39	5	500	TCC-5-11	1468-000005	5W5V5	NPOK-5	MS-55	V. Diode Filter
C40	.05	400	TCP-503-4	P488-05	GT4S5		TM-15	Video Coupling
C41	5000		TCC-502SP	1467-005	1D5D5	811-005	29C1	V. Det.-AGC Fil. Bypass
C42	270	1000	TCM-271-13	1468-00025	5W5T25	GP2K-270	1FM-325	V. Amp. Cathode Bypass
C43	.25	400	TCP-254-4	P488-25	GT4P25		TC-2	Video Coupling
C44	.05	400	TCP-503-4	P488-05	GT4S5		TM-15	Video Coupling
C45	270	1000	TCM-271-13	1468-00025	5W5T25	GP2K-270	1FM-325	Sync. Sep. Plate Bypass
C46	2.2		TCC-2.2-11					S. IF Coupling
C47	.02	400	TCP-203-4	P488-02	GT4S2		TM-12	S. IF Cathode Bypass
C48	.02	400	TCP-203-4	P488-02	GT4S2		TM-12	S. IF Decoupling
C49	330	500	TCM-331-5	1468-00035	5W5T3	GP2K-330	1FM-335	Diode Load Cap.
C50	5000		TCC-592SP	1467-005	1D5D5	811-005	29C1	RF Bypass
C51	1500		TCC-152-10	1467-0015	IW5D15	GP2L-0015	1FM-215	De-emphasis
C52	.02	400	TCP-203-4	P488-02	GT4S2		TM-12	Audio Coupling
C53	5000		TCC-502SP	1467-005	1D5D5	811-005	29C1	Vol. Control Isolation
C54	.01	400	TCP-103-10	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C55	.005	600	TCP-502-10	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C56	.02	400	TCP-203-4	P488-02	GT4S2		TM-12	Output Plate Bypass
C57	.05	400	TCP-503-4	P488-05	GT4S5		TM-15	Vert. Sync. Coupling
C58	.005	600	TCP-502-10	P688-005	GT6D5	GP2M-005	TM-25	Integrator Net.
C59	.005	600	TCP-502-10	P688-005	GT6D5	GP2M-005	TM-25	Integrator Net.
C60	.01	600	TCP-103-10	P688-01	GT6S1	GP2-335-01	TM-11	Vert. MV Feedback
C61	.1	400	TCP-104-4	P488-1	GT4P1		TM-1	Voltage Divider
C62	.1	400	TCP-104-4	P488-1	GT4P1		TM-1	Vert. Sweep Coupling
C63	100	500	TCM-101-14	1468-0001	5W5T1	GP1K-100	1FM-31	Vert. Sweep Coupling

CAPACIT

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEM: TELE-TONE PART No.	REPLACEM: AEROVOX PART No.	
C64	5000	500	TCM-502-8	1467-005	1
C65	.005	6000	TCP-502-6K	7584-005	D
C66	.005	6000	TCP-502-6K	7584-005	D
C67	100	500	TCM-101-14	1468-0001	S
C68	5000		TCC-502SP	1467-005	1
C69	.1	400	TCP-104-4	P488-1	C
C70	2000	500	TCP-202-10	1467-002	1
C71	.002	600	TCP-202-10	P688-002	C
C72	.002	600	TCP-202-10	P688-002	C
C73	.002	600	TCP-202-10	P688-002	C
C74	.005	6000	TCP-502-6K	7584-005	D
C75	.005	6000	TCP-502-6K	7584-005	D
C76	.1	600	TCP-104-4	P688-1	C
C77	750	500	TCM-751-8	1464-00075	
C78	.05	600	TCP-503-10	P688-05	C
C79	.001	6000	TCP-102-6K	7584-001	D
C80	.0005	6000	TCP-501-6K	7585-0005	D
C81	.05	600	TCP-503-10	P688-05	C
C82	.01	600	TCP-103-10	P688-01	C
C83	500	500		1469-0005	C
C84	.003	600		P688-003	C
C85	1500		TCC-152-10	1467-0015	
C86	.01	600	TCP-103-10	P688-01	C
C87	5000		TCC-502SP	1467-005	

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DAT: TELE-TONE PART No.	REPLACEMENT DAT: IRC PART No.
R1A	500KΩ	½	TVC-100D	Q13-133
B	Switch		Not Req.	76-1
R2A	1 Meg.	½	TVC-118D	B11-137 *
B	50KΩ	½		B11-123 *
C	Shaft End	½		E187 *
R3A	1000Ω	½	TVC-101D	B11-108 *
B	25KΩ	½		B11-120 *
C	Shaft End	½		E187 *
R4A	5 Meg.	½	TVC-103D	Q11-141
B	Shaft		Not Req.	SQ
R5	2.5 Meg	½	TVC-510D	
R6	5 Meg.	½	TVC-511D	
R7	5 Meg.	½	TVC-511D	

* Additional parts to be used with "Concentrikit

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: IRC PART
R8	330Ω 10%	½		
R9	56Ω 10%	½		
R10	1000Ω	½		BTS-100
R11	4700Ω	½		
R12	1 Meg.	½		
R13	1000Ω	½		BTS-100
R14	27KΩ	½		
R15	27KΩ	½		
R16	47Ω	½		
R17	11KΩ 5%	½		
R18	82Ω 10%	½		
R19	150Ω	½		
R20	150Ω	½		BW-½-15
R21	10KΩ 10%	½		
R22	82Ω 10%	½		
R23	150Ω	½		
R24	11KΩ 5%	½		
R25	82Ω 10%	½		
R26	2.2 Meg.	½		BTS-2.2
R27	47KΩ 10%	½		BTS-47
R28	2700Ω	½		BTS-27
R29	220KΩ	½		BTS-22
R30	8200Ω 5%	½		BTS-82
R31	1 Meg.	½		BTS-1 M
R32	6800Ω 5%	½		BTA-68
R33	10KΩ	½		BTS-10
R34	2.2 Meg.	½		BTS-2.2
R35	1 Meg.	½		BTS-1 M
R36	6800Ω	½		BTS-68
R37	100KΩ	½		BTS-100
R38	100KΩ	½		BTS-100
R39	390Ω	½		BW-½-39
R40	82Ω 10%	½		
R41	220Ω	½		
R42	470Ω	½		BTS-47
R43	220Ω	½		
R44	220Ω	½		
R45	15KΩ 5%	½		BTS-15
R46	15KΩ 5%	½		BTS-15
R47	47KΩ	½		BTS-47
R48	10 Meg.	½		BTS-10
R49	390KΩ	½		BTS-39
R50	470KΩ	½		BTS-47

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6J6	6J6	7BY	
V2	Mixer	6AG5	6AG5	7BD	
V3	Oscillator	6J6	6J6	7BY	
V4	1st Video IF	6AU6	6AU6	7BK	
V5	2nd Video IF	6AU6	6AU6	7BK	
V6	3rd Video IF	6AU6	6AV6	7BK	
V7	Video Det.-AGC Rectifier	6AL5	6AL5	6BT	
V8	Video Amp.	6AU6	6AU6	7BK	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Det.	6AL5	6AL5	6BT	
V11	AF Amp.	6AT6	6AT6	7BT	
V12	Audio Output	25L6GT	25L6GT	7AC	
V13	Sync. Sep.	6AU6	6AU6	7BK	
V14	Vert. Osc.	12BN7GT	12BN7GT	8BD	
V15	Vert. Amp.	6SL7GT	6SL7GT	8BD	
V16	DC Amp.	6J5	6J5	6Q	
V17	Hor. Sync. Disc.	6AL5	6AL5	6BT	
V18	Hor. Osc.-Phase Inverter	12BN7GT	12BN7GT	8BD	
V19	Hor. Amp.	12BN7GT	12BN7GT	8BD	
V20	HV Osc.	25L6GT	25L6GT	7AC	
V21	HV Rectifier	1B3GT	1B3GT	1C	
V22	Picture Tube	7JP4	7JP4	14G	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	200	150	TCE-100	AF4025D	UPI1BJ			▲ Filter
B	125	150			1055			▲ Filter
C2A	80	150	TCE-131	AF1616I8D	UPI1CJ			▲ Filter
B	80	150			1043			▲ Filter
C	80	150						▲ Filter
C3	80	150	TCE-127	AF16D	UP8015		TVL-1	Filter
C4	10	25		PRS25/10	BR10ZA		TVA-5	Sync. Sep. Cath. Bypass
C5	4	50	TCE-104	PRS150/4	BR550		TVA-13	Stabilising Cap.
C6	100	25		PRS25/100	BRH25IA		TVA-8	Output Cathode Bypass
C7	390		TCC-381-10			GP2K-390		Ant. Coupling
C8	380		TCC-381-10			GP2K-390		Ant. Coupling
C9	360		TCC-361-10			GP2K-390		RF Cathode Bypass
C10	360		TCC-361-10			GP2K-390		RF Plate Decoupling
C11	1		TCC-010-11					RF Coupling
C12	23		TCC-22-12			GP1K-22		RF Coupling
C13	360		TCC-361-10			GP2K-390		RF Filament Bypass
C14	5000		TCC-502SP			81L-005	29C1	Mixer Decoupling
C15	1		TCC-010-11					Osc. Coupling
C16	360		TCC-361-10			GP2K-390		Mixer Filament Bypass
C17	4.7		TCC-4.7-11			NPOK-4.7		Osc. Feedback
C18	4.7		TCC-4.7-11			NPOK-4.7		Osc. Feedback
C19	360		TCC-361-10			GP2K-390		Osc. Filament Bypass
C20	360		TCC-361-10			GP2K-390		Osc. Filament Bypass
C21	380		TCC-381-10			GP2K-390		Switch Bypass
C22	380		TCC-381-10			GP2K-390		Switch Bypass
C23	360		TCC-361-10			GP2K-390		RF Bypass
C24	370	1000	TCM-371-13	1468-00025	5WS725	GP2K-270	IFM-325	IF Coupling
C25	5000		TCC-502SP	1467-005	1D5D5	81L-005	29C1	AGC Filter
C26	5000		TCC-502SP	1467-005	1D5D5	81L-005	29C1	RF Bypass
C27	5000		TCC-502SP	1467-005	1D5D5	81L-005	29C1	1st V. IF Fil. Bypass
C28	370	1000	TCM-371-13	1468-00025	5WS725	GP2K-270	IFM-325	IF Coupling
C29	5000		TCC-502SP	1467-005	1D5D5	81L-005	29C1	AGC Filter
C30	5000		TCC-502SP	1467-005	1D5D5	81L-005	29C1	RF Bypass
C31	5000		TCC-502SP	1467-005	1D5D5	81L-005	29C1	2nd V. IF Fil. Bypass
C32	370	1000	TCM-371-13	1468-00025	5WS725	GP2K-270	IFM-325	IF Coupling
C33	5000		TCC-502SP	1467-005	1D5D5	81L-005	29C1	RF Bypass
C34	5000		TCC-502SP	1467-005	1D5D5	81L-005	29C1	3rd V. IF Cathode Bypass
C35	5000		TCC-502SP	1467-005	1D5D5	81L-005	29C1	3rd V. IF Filament Bypass
C36	150		TCC-151-10	1467-0015	1WD5D5	GP2L-0015	IFM-215	IF Coupling
C37	.25	200	TCP-254-1	P488-25		GT2P25	TC-2	AGC Filter
C38	5000		TCC-502SP	1467-005	1D5D5	81L-005	29C1	DAGC Decoupling
C39	5	500	TCC-5-11	1468-000005	5W5V5	NPOK-5	MS-55	V. Diode Filter
C40	.05	400	TCP-503-4	P488-05		GT4S5	TM-15	Video Coupling
C41	5000		TCC-502SP	1467-005	1D5D5	81L-005	29C1	V. Det.-AGC Fil. Bypass
C42	370	1000	TCM-371-13	1468-00025	5WS725	GP2K-270	IFM-325	V. Amp. Cathode Bypass
C43	.25	400	TCP-254-4	P488-25		GT4P25	TC-2	Video Coupling
C44	.05	400	TCP-503-4	P488-05		GT4S5	TM-15	Video Coupling
C45	370	1000	TCM-371-13	1468-00025	5WS725	GP2K-270	IFM-325	Sync. Sep. Plate Bypass
C46	2.2		TCC-2.2-11					S. I.F Coupling
C47	.02	400	TCP-203-4	P488-02		GT4S2	TM-12	S. IF Cathode Bypass
C48	.02	400	TCP-203-4	P488-02		GT4S2	TM-12	S. I.F Decoupling
C49	330	500	TCM-331-5	1468-00035	5WS7S3	GP2K-330	TM-25	Diode Load Cap.
C50	5000		TCC-592SP	1467-005	1D5D5	81L-005	29C1	RF Bypass
C51	1500		TCC-152-10	1467-0015	1W3D15	GP2L-0015	IFM-215	De-emphasis
C52	.02	400	TCP-203-4	P488-02			TM-12	Audio Coupling
C53	5000		TCC-502SP	1467-005	1D5D5	81L-005	29C1	Vol. Control Isolation
C54	.01	400	TCP-103-10	P488-01		GT4S1	TM-11	Audio Coupling
C55	.005	600	TCP-502-10	P588-005		GT6D5	TM-25	Audio Coupling
C56	.02	400	TCP-203-4	P488-02		GT4S2	TM-12	Output Plate Bypass
C57	.05	400	TCP-503-4	P488-05		GT4S5	TM-15	Vert. Sync. Coupling
C58	.005	600	TCP-502-10	P688-005		GT6D5	GP2M-005	TM-25 Integrator Net.
C59	.005	600	TCP-502-10	P688-005		GT6D5	GP2M-005	TM-25 Integrator Net.
C60	.01	600	TCP-103-10	P688-01		GT6S1	GP2-335-01	TM-11 Vert. MV Feedback
C61	.1	400	TCP-104-4	P488-1		GT4P1		TM-1 Voltage Divider
C62	.1	400	TCP-104-4	P488-1		GT4P1		TM-1 Vert. Sweep Coupling
C63	100	500	TCM-101-14	1468-0001	5WS71	GP1K-100	IFM-31	Vert. Sweep Coupling

CAPACITORS (CONT.)

ITEM No	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C64	5000	500	TCM-502-8	1467-005	1D5D5	GP2M-005	29C1	Voltage Divider
C65	.005	6000	TCP-502-6K	7584-005	D5TH-60D5		TVM-256	Vert. Sweep Coupling
C66	.005	6000	TCP-502-6K	7584-005	D5TH-60D5		TVM-256	Vert. Sweep Coupling
C67	100	500	TCM-101-14	1468-0006	5W5V1	GP1K-100	IFM-31	Hor. Sync. Coupling
C68	5000		TCC-502SP	1467-005	1D5D5	81L-005	29C1	RF Bypass
C69	1	400	TCP-104-4	P488-1		GT4P1	TM-1	Hor. Sync. Coupling
C70	2000	560	TCP-202-10	1467-002	1W2D2	GP2M-002	IFM-22	Hor. Osc. Grid Cap.
C71	.002	600	TCP-202-10	P688-002	GT6D2	GP2M-002	TM-22	Hor. Sweep Coupling
C72	.002	600	TCP-202-10	P688-002	GT6D2	GP2M-002	TM-22	Hor. Sweep Coupling
C73	.002	600	TCP-202-10	P688-002	GT6D2	GP2M-002	TM-22	Hor. Sweep Coupling
C74	.005	6000	TCP-502-6K	7584-005	D5TH-60D5		TVM-256	Hor. Sweep Coupling
C75	.005	6000	TCP-502-6K	7584-005	D5TH-60D5		TVM-256	Hor. Sweep Coupling
C76	.1	600	TCP-104-4	P688-1	GT6P1		TM-1	RF Bypass
C77	750	500	TCM-751-8	1464-00075		GP2K-750		Fixed Trimmer
C78	.05	600	TCP-503-10	P688-05	GT6S5		TM-15	HV Osc. Screen Bypass
C79	.001	6000	TCP-102-6K	7584-001	D5TH-60D1		TVM-216	HV Filter
C80	.0005	6000	TCP-501-6K	7583-0005	D5TH-6075		TVM-356	HV Filter
C81	.05	600	TCP-503-10	P688-05	GT6S5		TM-15	Line Filter
C82	.01	600	TCP-103-10	P688-01	GT6S1	GP2-335-01	TM-11	Centering Cont. Bypass
C83	500	500		1468-00005	5WS7S		MS-35	Fixed Trimmer
C84	.003	600		P688-003	GT6D3	GP2M-003	TM-23	Hor. Osc. Decoupling
C85	1500		TCC-152-10	1467-0015	1W5D15	GP2L-0015	IFM-215	Bias Filter
C86	.01	600	TCP-103-10	P688-01	GT6S1	GP2-335-01	TM-11	Bias Filter
C87	5000		TCC-502SP	1467-005	1D5D5	81L-005	29C1	RF Bypass

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ		TVC-100D	Q13-133	M-50-Z	Volume control
B	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions
R2A	1 Meg.			B11-137 *		Vert. hold control, front
B	500Ω		TVC-118D	B11-123 *		Horiz. hold control, rear
C	Shaft End			E187 *		Attach per instructions in "Concentrikit".
R3A	1000Ω			B11-108 *		Contrast control, front
B	250Ω		TVC-102D	B11-120 *		Brightness control, rear
C	Shaft End			E187 *		Attach per instructions in " Concentrikit".
R4A	5 Meg.		TVC-103D	Q11-141	AM-65-S	Height control
B	Shaft		Not Req.	SQ	KSS-3 *	Attach to R4A per instructions
R5	2.5 Meg.		TVC-510D			Focus control
R6	5 Meg.		TVC-51JD			Horiz. centering control, tapped at 2.5 Meg.
R7	5 Meg.		TVC-51JD			Vert. centering control, tapped at 2.5 Meg.

* Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 20% UNLESS OTHERWISE STATED
R8	330Ω 10%				RF Cathode
R9	56Ω 10%				Parasitic Supp.
R10	1000Ω			BTS-1000	RF Plate Decoupling
R11	4700Ω				Mixer Grid Coil Shunt
R12	1 Meg.				Mixer Grid
R13	1000Ω			BTS-1000	Mixer Decoupling
R14	27KΩ				Osc. Grid
R15	27KΩ				Osc. Grid
R16	47Ω				Osc. Cathode
R17	11KΩ 5%				1st Video IF Grid
R18	82Ω 10%				1st Video IF Cathode
R19	150Ω				AGC Network
R20	150Ω			BW-½-150	Decoupling, Wire Wound
R21	10KΩ 10%				2nd Video IF Grid
R22	82Ω 10%				2nd Video IF Cathode
R23	150Ω				AGC Network
R24	11KΩ 5%				3rd Video IF Grid
R25	82Ω 10%				3rd Video IF Cathode
R26	2.2 Meg.			BTS-2.2 Meg.	AGV Network
R27	47KΩ 10%			BTS-47K	AGC Rect. Diode Load
R28	270KΩ			BTS-270K	AGC Rect. Diode Load
R29	220KΩ			BTS-220K	Voltage Divider
R30	8200Ω 5%			BTS-8200-5%	Video Det. Diode Load
R31	1 Meg.			BTS-1 Meg.	Video Amp. Grid
R32	6800Ω 5%			BTA-6800-5%	Video Amp. Plate
R33	10KΩ			BTS-10K	Isolation
R34	2.2 Meg.			BTS-2.2 Meg.	Voltage Divider
R35	1 Meg.			BTS-1 Meg.	Sync. Sep. Grid
R36	6800Ω			BTS-6800	Sync. Sep. Cathode
R37	100KΩ			BTS-100K	Sync. Sep. Plate
R38	100KΩ			BTS-100K	Phase Correction
R39	390Ω			BW-½-390	Voltage Divider
R40	82Ω 10%				Sound IF Cathode
R41	220Ω				Parasitic Supp.
R42	470Ω			BTS-470	Sound IF Decoupling
R43	220Ω				Balancing
R44	220Ω				Balancing
R45	15KΩ 5%			BTS-15K-5%	Ratio Det. Diode Load
R46	15KΩ 5%			BTS-15K-5%	Ratio Det. Diode Load
R47	47KΩ			BTS-47K	De-emphasis
R48	10 Meg.			BTS-10 Meg.	AF Grid
R49	390KΩ			BTS-390K	AF Plate
R50	470KΩ			BTS-470K	Output Grid

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R51	220Ω			BW-½-220	Output Cathode
R52	4700Ω			BTS-4700	Integrator
R53	4700Ω			BTS-4700	Integrator
R54	1000Ω			BTS-1000	Vert. Osc. Cathode
R55	100KΩ 5%			BTA-100K-5%	Vert. Osc. Plate
R56	390KΩ			BTS-390K	Vert. Osc. Grid
R57	15 Meg.			BTS-15 Meg.	Voltage Divider
R58	10 Meg.			BTS-10 Meg.	Voltage Divider
R59	10 Meg.			BTS-10 Meg.	Voltage Divider
R60	2.2 Meg.	1		BTA-2.2 Meg.	Vert. Osc. Plate
R61	10 Meg.	1		BTS-10 Meg.	Vert. Amp. Grid
R62	10 Meg.	1		BTS-10 Meg.	Vert. Amp. Grid
R63	4.7Meg. 10%	1		BTA-4.7 Meg.	Vert. Amp. Plate
R64	4.7Meg. 10%	1		BTA-4.7 Meg.	Vert. Amp. Plate
R65	5.6 Meg.	1		BTS-5.6 Meg.	Vert. Deflection Load
R66	5.6 Meg.	1		BTS-5.6 Meg.	Vert. Deflection Load
R67	51KΩ 5%				DC Amp. Plate
R68	27KΩ 10%			BTS-27K	Isolation
R69	1500Ω			BTS-1500	DC Amp. Cathode
R70	100KΩ			BTS-100K	Horiz. Sync. Disc. Load
R71	100KΩ			BTS-100K	Horiz. Sync. Disc. Load
R72	220KΩ			BTS-220K	Horiz. Sync. Disc. Load
R73	1 Meg.			BTS-1 Meg.	Horiz. Phase Inv. Grid
R74	10KΩ			BTS-10K	Horiz. Phase Inv. Cathode
R75	10KΩ			BTS-10K	Horiz. Phase Inv. Plate
R76	80KΩ 5%				Voltage Divider
R77	68KΩ			BTS-68K	Horiz. Osc. Plate Decoupling
R78	220KΩ			BTS-220K	Horiz. Amp. Grid
R79	220KΩ			BTS-220K	Horiz. Amp. Grid
R80	470KΩ			BTS-470K	Feedback
R81	150KΩ 10%			BTS-150K	Horiz. Amp. Grid
R82	470KΩ			BTS-470K	Picture Tube Grid
R83	4.7 Meg.			BTS-4.7 Meg.	Horiz. Deflection Load
R84	4.7 Meg.			BTS-4.7 Meg.	Horiz. Deflection Load
R85	68Ω				Parasitic Supp.
R86	4700Ω			BTS-4700	HV Osc. Grid
R87	1500Ω			BTS-1500	HV Osc. Screen
R88	100KΩ 5%	1			HV Filter
R89	1 Meg.	1		BTS-1 Meg.	Voltage Divider
R90	3.3 Meg.	2		BTS-3.3 Meg.	Voltage Divider
R91	2.2 Meg. 10%	1			Voltage Divider
R92	2.2 Meg. 10%	1			Voltage Divider
R93	2.2 Meg. 10%	1			Voltage Divider
R94	2.2 Meg. 10%	1			Voltage Divider
R95	100Ω	1		BW-1-100	Filter
R96	25Ω	5			Surge Limiter, Wire Wound,
R97	86Ω	2			Filament Dropping, Wire Wound

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T1	7.5Ω	3.3Ω	TTR-168-D	A-8110	A-3002		Hor. Block Osc. Trans.
T2	1100Ω	2.9Ω	TTR-166-D				Hor. Output Trans.
Tap. at	750Ω	CT					
	550Ω						
	350Ω						

TRANSFORMER (H.V. OSC.)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T3	1.1Ω	750Ω	25Ω	0Ω	TLF-137-D			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T4	2.6KΩ	3.3Ω	250Ω	0Ω	Part of TSP-46-B	A-3876 *	A-2928 *	RO-2 *	* Bend mounting tabs down and mount on original bracket.

TELE-TONE MODEL TV-17O

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	TELE-TONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.3Ω	TSP-46-B	ST-113 † MOD. P4-X	4A07 †	† Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	3 7/8"	9/16"				

COILS (RF-IF)

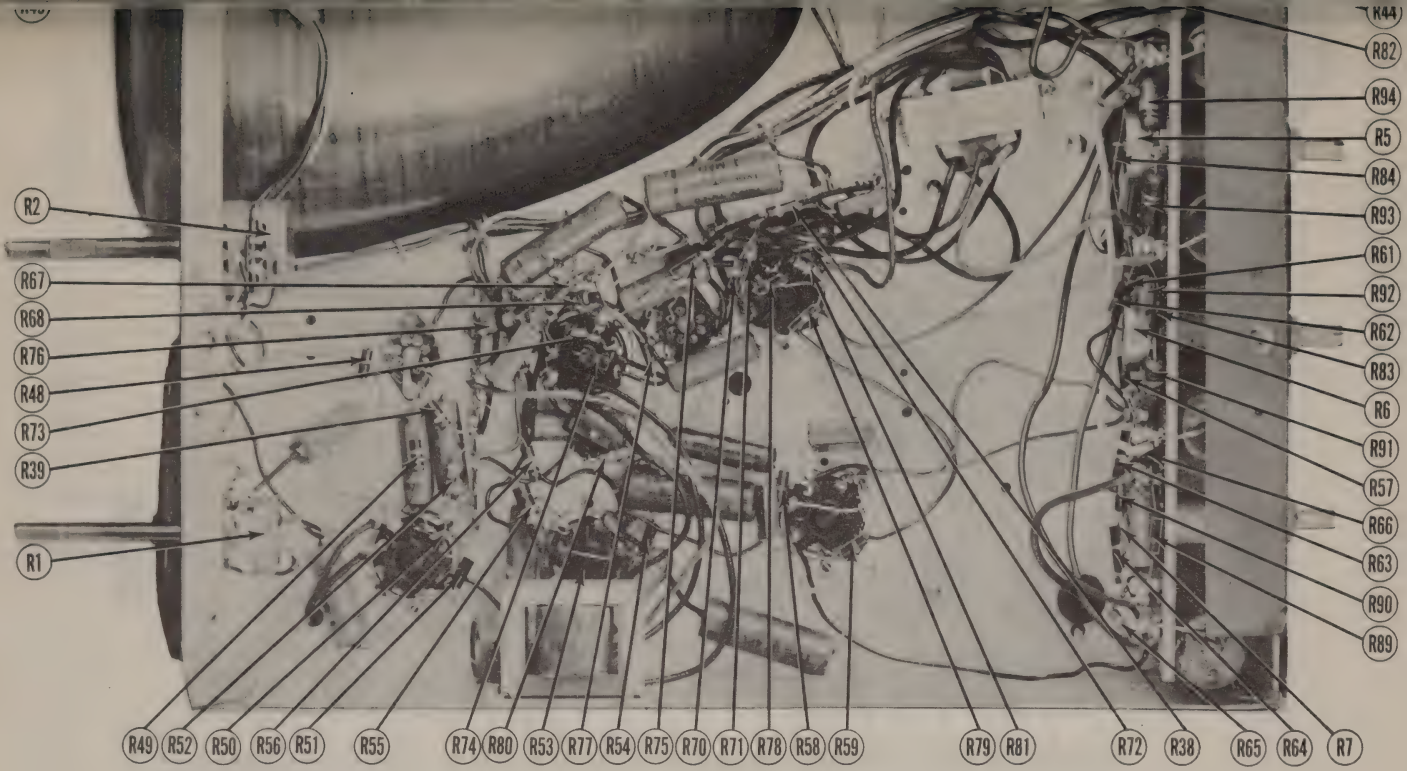
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	TELE-TONE PART No.	MEISSNER PART No.	
L1	Ant. Input	.2Ω				
L2	RF End Inductor	0Ω				
L3	RF End Inductor	0Ω				
L4	RF Plate Choke	1Ω				
L5A	Osc. Coil	0Ω		TLF-120-1D		Channel #2
B	Osc. Coil	0Ω		TLF-120-2D		Channel #3
C	Osc. Coil	0Ω		TLF-120-3D		Channel #4
D	Osc. Coil	0Ω		TLF-120-4D		Channel #5
E	Osc. Coil	0Ω		TLF-120-5D		Channel #6
F	Osc. Coil	0Ω		TLF-120-6D		Channel #7
G	Osc. Coil	0Ω		TLF-120-7D		Channel #8
H	Osc. Coil	0Ω		TLF-120-8D		Channel #9
I	Osc. Coil	0Ω		TLF-120-9D		Channel #10
J	Osc. Coil	0Ω		TLF-120-10D		Channel #11
K	Osc. Coil	0Ω		TLF-120-10D		Channel #12
L	Osc. Coil	0Ω		TLF-120-10D		Channel #13
L6	1st Video IF	.1Ω				
L7	2nd Video IF	.1Ω				
L8	3rd Video IF	.1Ω				
L9	4th Video IF	.1Ω				
L10	Peaking	5.8Ω				Wound on 33KΩ resistor.
L11	Peaking	9Ω				
L12	Peaking	10Ω				Wound on 22KΩ resistor.
L13	Peaking	8.5Ω				Wound on 15KΩ resistor.
L14	Sound IF	1.1Ω				
L15	Ratio Det. Transformer	4Ω	6Ω	TLF-142-D		
L16	Fil. Choke	0Ω				
L17	Fil. Choke	0Ω				

SELENIUM RECTIFIER

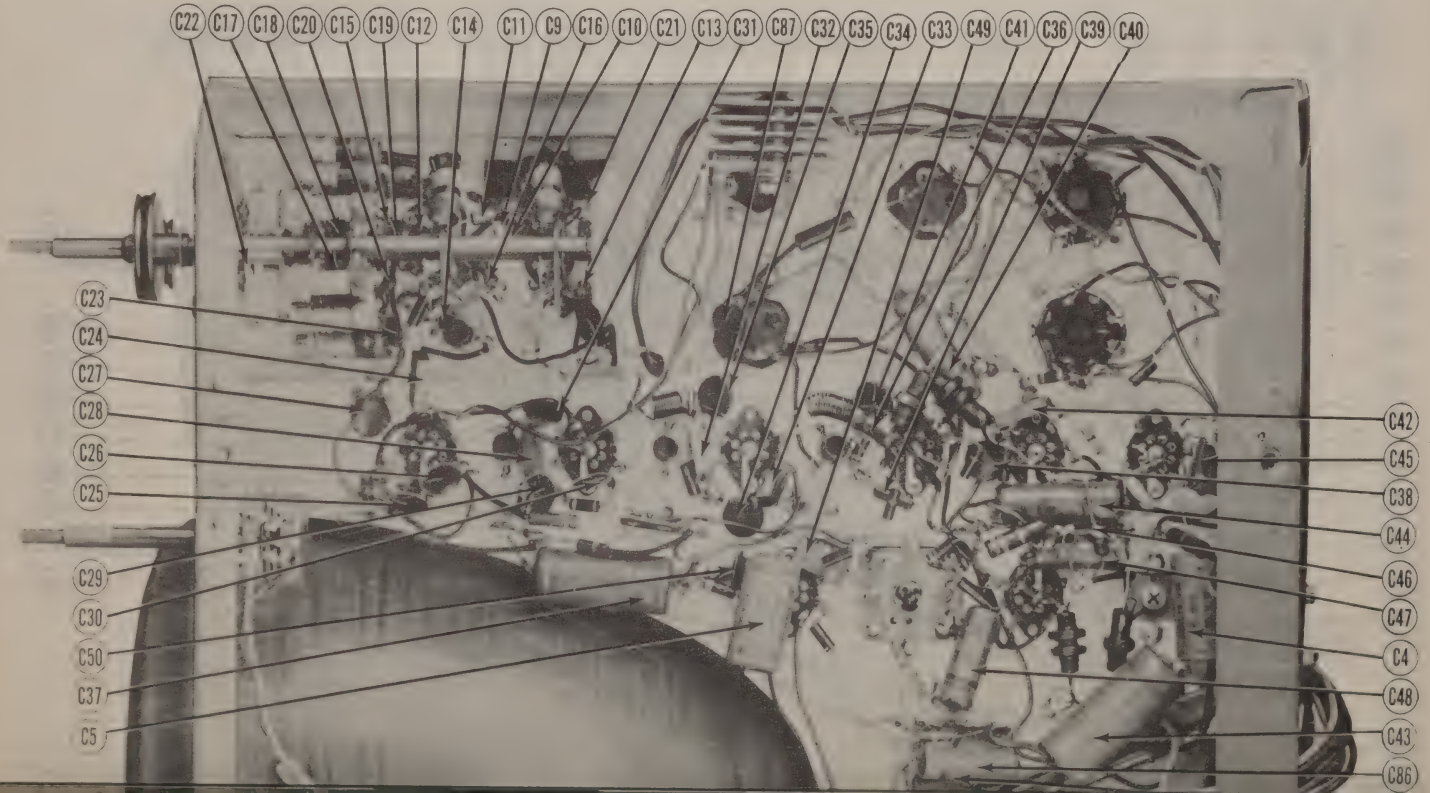
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	TELE-TONE PART No.	SYLVANIA PART No.		
M1	.210A	TSR-100	NF-5		

MISCELLANEOUS

ITEM No.	PART NAME	TELE-TONE PART No.	NOTES
M2	RF Tuner		
M3	Ballast Tube		



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION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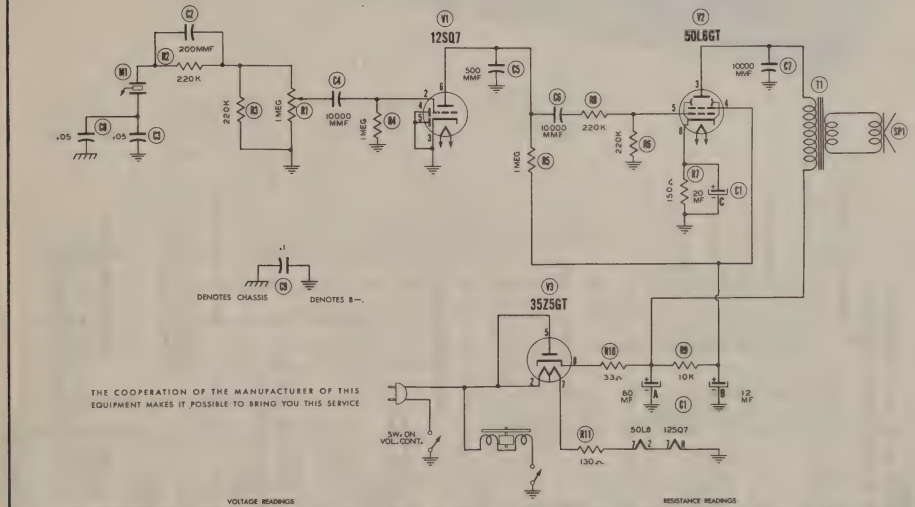
TRAV-LER
MODEL 7023

TRAV-LER MODEL 7023

TRADE NAME	Trav-ler, Model 7023
MANUFACTURER	Trav-ler Radio and Tel. Corp., 571 W. Jackson, Chicago, Illinois
TYPE SET	AC Operated Phono Player with 3 Tube Amplifier
TUBES (THREE)	Types 12SQ7GT AF Amp., 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-125 Volts AC
RATING:	.24 Amp. at 117 Volts AC



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SQ7GT	0V.	-.8VDC	0V.	0V.	0V.	27VDC	12VAC	0V.
V 2	50L6GT	0V.	12VAC	125VDC	105VDC	0V.	0V.	88VAC	7.1VDC
V 3	35Z5GT	0V.	117VAC	120VAC	0V.	117VAC	0V.	88VAC	130VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SQ7GT	Inf	1 Meg	0Ω	Inf	Inf	† 1 Meg	13Ω	0Ω
V 2	50L6GT	Inf	13Ω	†185Ω	†10K Ω	330KΩ	440KΩ	80Ω	150Ω
V 3	35Z5GT	Inf	225Ω	310Ω	Inf	225Ω	Inf	190Ω	40KΩ

† Measured from pin 8 of V3.

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83-13

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	AF Amp.	12SQ7GT	12SQ7GT	8Q	
V2	Power Output	50L6GT	50L6GT	7AC	
V3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAV-LER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	150	EC-9	PRSA150/80-40	EDL8415C		TA-304 †	Filter, Red Note 1
B	12	150		PRS25/10			TA-10	Filter, White
C	10	25						Output Cathode Bypass Blue
C2	200	500	MC-3	1468-0002	5W5T2	GP2K-200	1FM-32	Tone Compensation
C3	.05	400	PC-5	P488-05	PTE4S5		TM-15	Phono Isolation
C4	10000	500	PC-7	P688-01	PTE6S1	GP2-335-01	TM-11	Audio Coupling
C5	500	500	MC-5	1468-0005	5W5T5	GP2K-500	1FM-35	AF Amp. Plate Bypass
C6	10000	500	PC-7	P688-01	PTE6S1	GP2-335-01	TM-11	Audio Coupling
C7	10000	500	PC-7	P688-01	PTE6S1	GP2-335-01	TM-11	Output Plate Bypass
C8	.05	400	PC-5	P488-05	PTE4S5		TM-15	Phono Isolation See Note 2
C9	.1	400	PC-8	P488-1	PTE4P1		TM-1	Line Isolation See Note 2

† Parallel sections to obtain desired capacity.

Note 1. Some models use an 80-40MFD/150 volts part No. EC-14 plus 10MFD/75 volt part No. EC-11 in this application.

Note 2. Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	VC-11	Q13-137	AM-63-Z	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	IDENTIFICATION CODES
R2	220KΩ	½	IR-20	BTS-220K	Tone Compensation
R3	220KΩ	½	IR-20	BTS-220K	Volume control Shunt
R4	1 Meg.	½	IR-12	BTS-1 Meg.	AF Grid
R5	1 Meg.	½	IR-12	BTS-1 Meg.	AF Plate
R6	220KΩ	½	IR-20	BTS-220K	Output Grid
R7	150Ω	½	IR-14	BW-½-150	Output Cathode
R8	220KΩ	½	IR-20	BTS-220K	Tone Compensation
R9	10KΩ	½	IR-37	BTS-10K	Filter
R10	33Ω	½	IR-37		Surge Limiter
R11	130Ω	3	WR-2		Filament Dropping, Wire Wound

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TRAV-LER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	2.4KΩ	3.3Ω	144Ω	.4Ω	Part of SPK-7	A-3332 #	A-3025 #	RO-2 #	# Bend mounting tabs down and mount on original bracket.

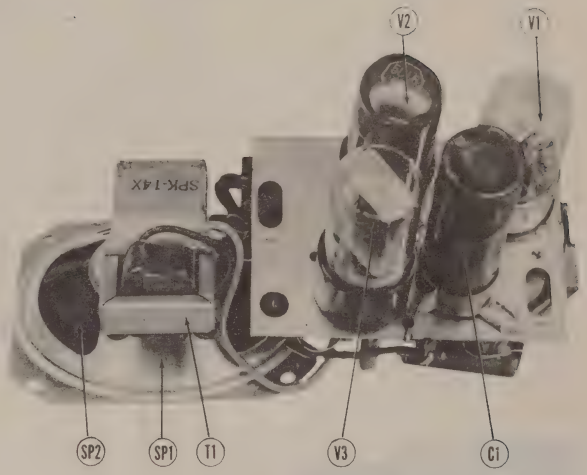
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: TRAV-LER PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-113 *		
SP1	PM	3.3Ω	SPK-7	MOD. P4-X	4A07 *	* Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	3 7/8"	9/16"				

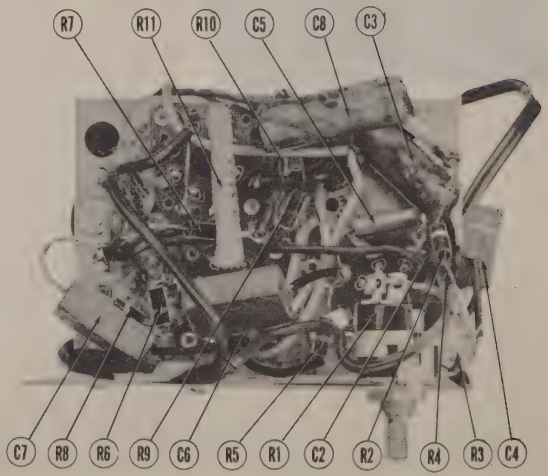
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: TRAV-LER PART No.	ASTATIC PART No.	REMARKS
M1	AC-PU-7	LQD-1M	

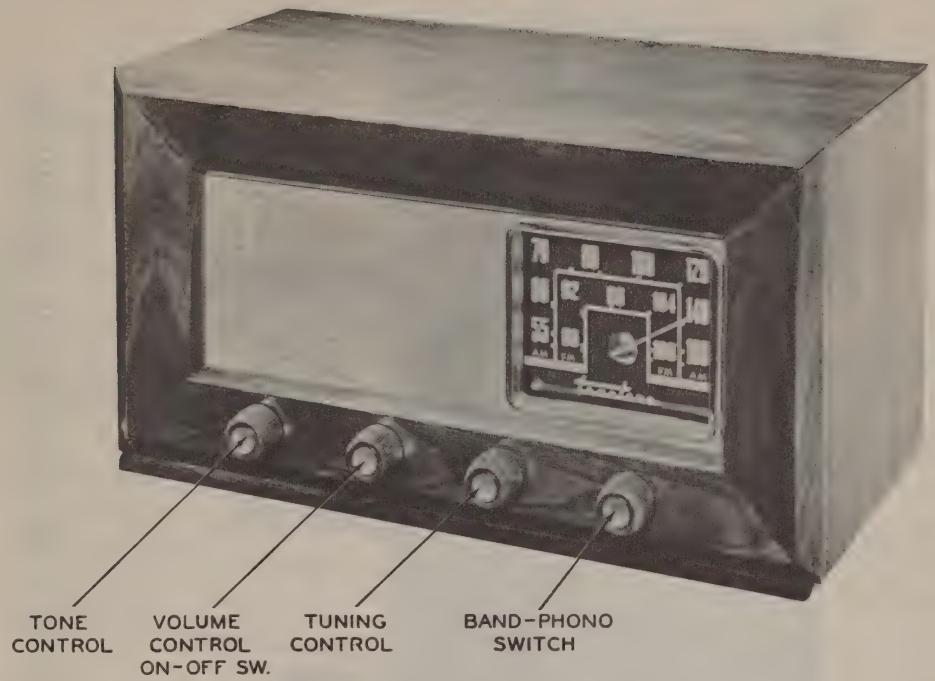
CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



TRUETONE
MODEL D2025A (Fact. Mod. 26A95-906)



TRUETONE
MODEL D2025A (Fact. Mod. 26A95-906)

TRUETONE MODEL D2025A

TRADE NAME	Truetone, Model D2025A (Fact. Model 26A59-906)		
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.		
TYPE SET	AC Operated AM-FM Superheterodyne Receiver with Loop Antenna		
TUBES(SEVEN)	Types 6BA7 Converter, 6BA6 1st IF Amp., 6BA6 FM 2nd IF Amp., 6AL5 Ratio Det., 6AV6 DET-AVC-AF, 6V6GT Power Output, 6X5GT Rectifier		
POWER SUPPLY	105-125 Volts AC	RATING	.32 Amp. at 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC	FREQ. MOD.	88-108MC

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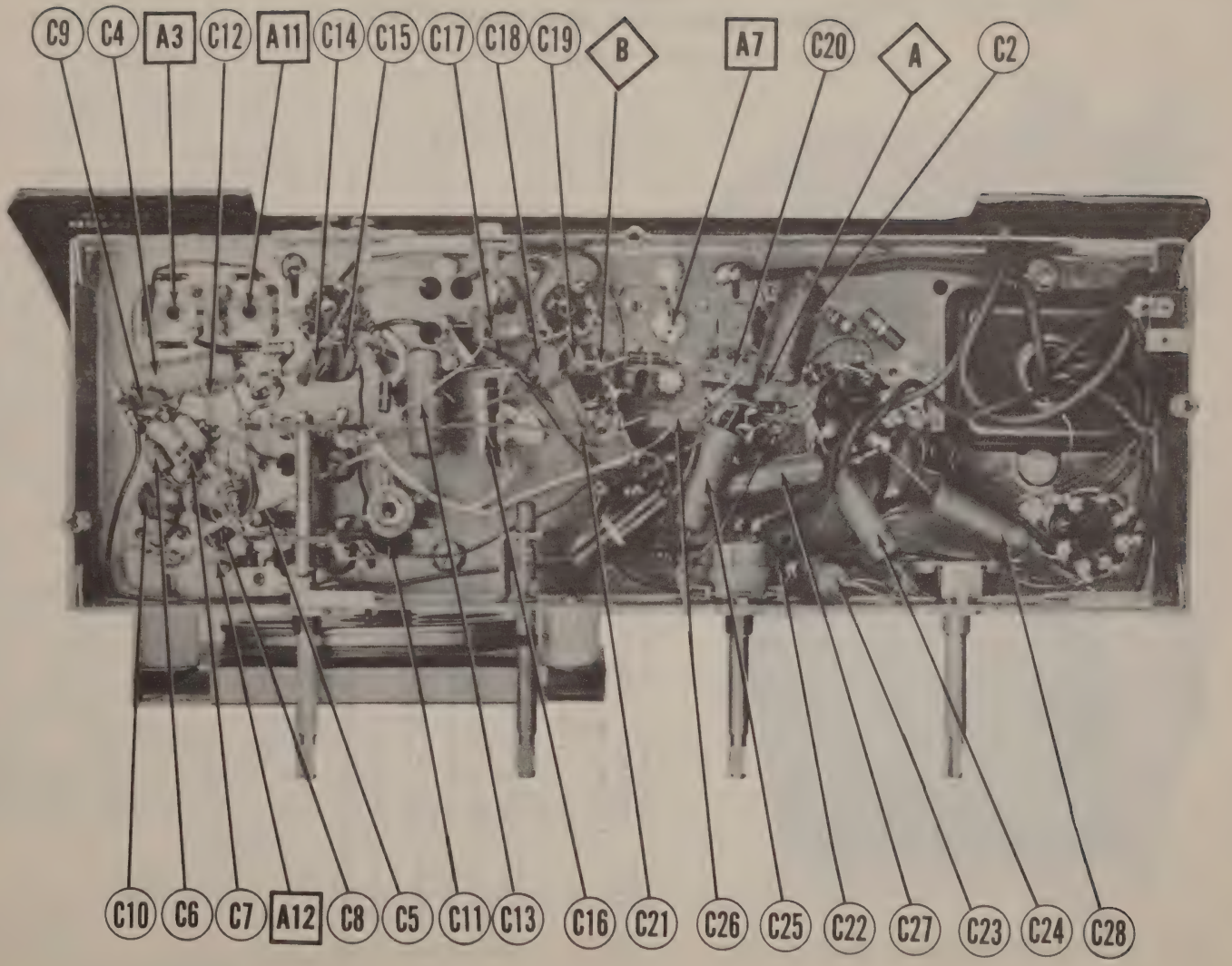
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A3
C12
A11
C14
C15
C17
C18
C19
B
A7
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A
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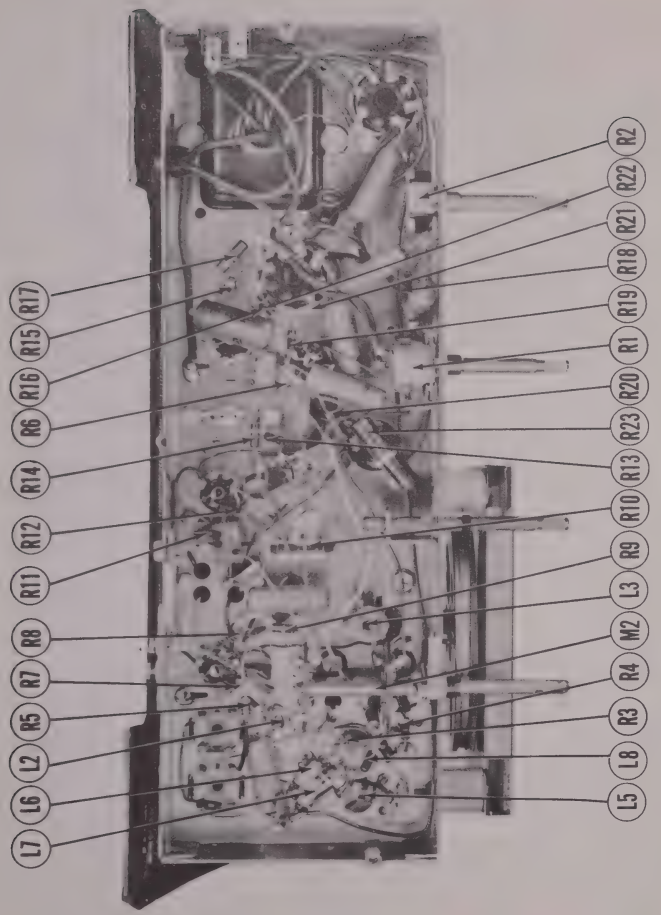

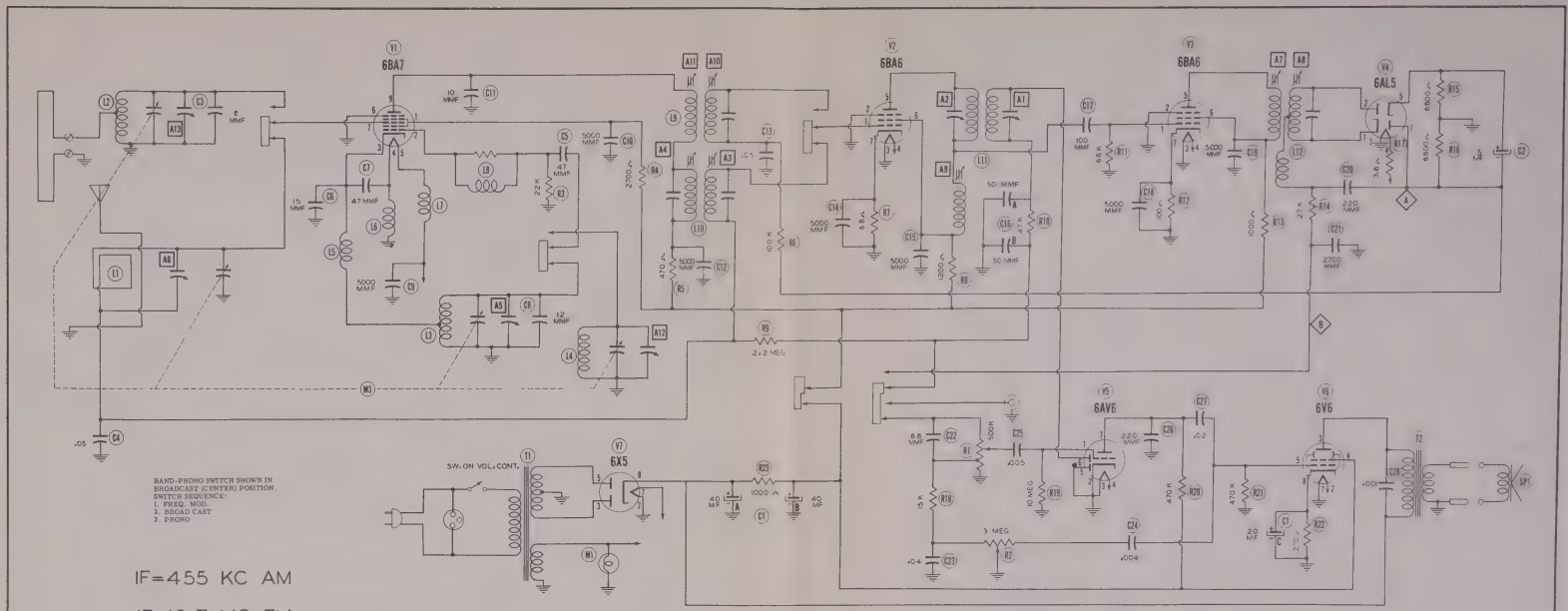

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1A	6BA7	90VDC	5-5.8VDC	0V.	0V.	6.3VAC	0V.	-.3VDC	0V.	180VDC
‡ B	6BA7	87VDC	5-2VDC	0V.	0V.	6.3VAC	0V.	0V.	0V.	115VDC
V2	6BA6	-.2VDC	0V.	0V.	6.3VAC	100VDC	100VDC	.9VDC		
‡ V3	6BA6	0V.	0V.	0V.	6.3VAC	100VDC	100VDC	1.2VDC		
‡ V4	6AL5	.1VDC	.2VDC	0V.	5.4VAC	.8VDC	0V.	-.2VDC		
V5	6AV6	-.5VDC	0V.	0V.	6.3VAC	0V.	-.8VDC	55VDC		
V6	6V6GT	0V.	6.3VAC	150VDC	120VDC	0V.	0V.	0V.	5.4VDC	
V7	6X5GT	0V.	0V.	160VAC	0V.	160VAC	0V.	6.3VAC	160VDC	

TAKEN WITH VACUUM TUBE VOLTMETER.
‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1A	6BA7	13.7KΩ	22KΩ	2Ω	0Ω	.1Ω	0Ω	2.7 Meg.	0Ω	†1.5KΩ
‡ B	6BA7	13.7KΩ	22KΩ	2Ω	0Ω	.1Ω	0Ω	0Ω	0Ω	†1.5KΩ
V2	6BA6	2.7 Meg.	0Ω							
‡ V3	6BA6	68KΩ								
‡ V4	6AL5	520KΩ								
V5	6AV6	10 Meg.	0Ω	0Ω	.1Ω	0Ω				
V6	6V6GT	INF	.1Ω	1400Ω	†1000Ω	470KΩ	INF	0Ω	270Ω	
V7	6X5GT	INF	0Ω	130Ω	INF	120Ω	INF	.1Ω	50KΩ	

† Measured from pin 8 of V7.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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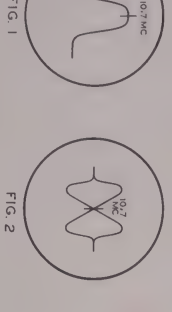


FIG. 1

FIG. 2

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.
When complete receiver alignment is to be performed, the order outlined should be followed.
The AM IF system should be aligned before attempting FM IF alignment.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use insulated alignment screwdriver for adjusting.

	1	2	3	4	5	6	7	8	9
	SIGNAL GENERATOR ANTENNA COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO SETTING	OUTPUT METER	ADJUST	REMARKS
1	IMFD	High side to pin 7 (Grid of 6BA7 (VI)). Low side to chassis	455KC (400 ~ Mod.)	AM	Turn fully counter-clockwise	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2	IMFD	Loop	1620KC	..	..	..	..	..	..
3									
4									
5									
6									
7									
8									
9									

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM.

	1	2	3	4	5	6	7	8	9
	SIGNAL GENERATOR ANTENNA COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO SETTING	VTVM CONNECT	ADJUST	REMARKS
1	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	455KC (400 ~ Mod.)	FM	Tune for maximum reading	DC Probe ⊕ to Point ⊕ Common to chassis.	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	10.7MC (Unmod.)	..	..	..	A6	..
3	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	10.7MC (Sweep)	..	..	..	A7	Disconnect stabilizer capacitor from one side of discriminator coil. Adjust for maximum deflection.
4	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	10.7MC (Sweep)	..	..	..	A8	Disconnect stabilizer capacitor from one side of discriminator coil. Adjust for maximum deflection.
5	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	10.7MC (Sweep)	..	..	..	A9	Disconnect stabilizer capacitor from one side of discriminator coil. Adjust for maximum deflection.
6	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	10.7MC (Sweep)	..	..	..	A10	Disconnect stabilizer capacitor from one side of discriminator coil. Adjust for maximum deflection.
7							
8							
9							

FM RF ALIGNMENT

	1	2	3	4	5	6	7	8	9
	SIGNAL GENERATOR ANTENNA COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO SETTING	SCOPE CONNECT	ADJUST	REMARKS
1	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	98 MC (Unmod.)	FM	Tune same as (3)	DC Probe ⊕ to Point ⊕ Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
2	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	98 MC (Unmod.)	AM	Tune for maximum reading	DC Probe ⊕ to Point ⊕ Common to chassis.	A9	Adjust for maximum deflection. Attenuate signal generator to maintain same VTVM reading as obtained in step 4.
3	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	98 MC (Sweep)	FM (center)	Tune same as (1)	Vert. Amp. ⊕ to Point ⊕ Common to chassis.	A10, A11	..
4	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	98 MC (Sweep)	FM (center)	Tune for max. interference	Vert. Amp. ⊕ to Point ⊕ Common to chassis.	A7	Disconnect stabilizer capacitor from one side of discriminator coil. Adjust for maximum deflection.
5	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	98 MC (Sweep)	FM (center)	Tune for max. deflection.	Vert. Amp. ⊕ to Point ⊕ Common to chassis.	A8	Disconnect stabilizer capacitor from one side of discriminator coil. Adjust for maximum deflection.
6	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	98 MC (Sweep)	FM (center)	Tune for max. deflection.	Vert. Amp. ⊕ to Point ⊕ Common to chassis.	A9	Disconnect stabilizer capacitor from one side of discriminator coil. Adjust for maximum deflection.
7							
8							
9							

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Note: Frequency modulated signal with 10.7 MC ~ modulation and 98 MC sweep. Use 300 ~ sawtooth voltage to scope for horizontal deflection.

	1	2	3	4	5	6	7	8	9
	SIGNAL GENERATOR ANTENNA COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO SETTING	SCOPE CONNECT	ADJUST	REMARKS
1	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	98 MC (Unmod.)	FM (center)	Tune same as (1)	DC Probe ⊕ to Point ⊕ Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
2	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	98 MC (Unmod.)	AM	Tune for maximum reading	DC Probe ⊕ to Point ⊕ Common to chassis.	A9	Adjust for maximum deflection. Attenuate signal generator to maintain same VTVM reading as obtained in step 4.
3	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	98 MC (Sweep)	FM (center)	Tune for max. interference	Vert. Amp. ⊕ to Point ⊕ Common to chassis.	A10, A11	..
4	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	98 MC (Sweep)	FM (center)	Tune for max. deflection.	Vert. Amp. ⊕ to Point ⊕ Common to chassis.	A7	Disconnect stabilizer capacitor from one side of discriminator coil. Adjust for maximum deflection.
5	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	98 MC (Sweep)	FM (center)	Tune same as (1)	DC Probe ⊕ to Point ⊕ Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6	2500MMF High side to pin 1 (Grid of 6BA6 (V2)). Low side to chassis	10.7MC (Unmod.)	AM	Tune for maximum reading	DC Probe ⊕ to Point ⊕ Common to chassis.	A9	Adjust for maximum deflection. Attenuate signal generator to maintain same VTVM reading as obtained in step 4.
7							
8							
9							

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	6BA7	6BA7	8CT	
V2	1st IF Amp.	6BA6	6BA6	7BK	
V3	FM 2nd IF Amp.	6BA6	6BA6	7BK	
V4	Ratio Det.	6AL5	6AL5	6BT	
V5	DET.-AVC-AF	6AV6	6AV6	7BT	
V6	Power Output	6V6GT	6V6GT	7AC	
V7	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	200	45X360	AF8874A	UP4445C		EL-432*	▲ Filter
B	40	150						■ Filter
C	20	25						▲ Output Cathode Bypass
C2	5	150	45X301	PRS150/4	BR415		UT-41	Stabilizing Cap.
C3	6		47X321					Fixed Trimmer
C4	.05	200	B66903	P288-05	GT285		TM-15	AVC Filter
C5	47		47X517	1468-00005	5W5Q5	GPIK-47	1FM-45	Osc. Grid Cap.
C6	15		47X552					Osc. Feedback
C7	47		47X509	1468-00005	5W5Q5	GPIK-47	1FM-45	Osc. Feedback
C8	12		47X522					Fixed Trimmer
C9	5000		47X507	1467-005	1D5D5	811-005	29C1	Filament Bypass
C10	5000		47X507	1467-005	1D5D5	811-005	29C1	Osc. Anode Bypass
C11	30		47X512	1469-00001	5R5Q1	NPOK-10	MS-41	Fixed Trimmer
C12	5000		47X507	1467-005	1D5D5	811-005	29C1	Conv. Plate Decoupling
C13	.05	200	B66503	P288-05	GT285		TM-15	AVC Filter
C14	5000		47X507	1467-005	1D5D5	811-005	29C1	1st IF Cath. Bypass
C15	5000		47X507	1467-005	1D5D5	811-005	29C1	1st IF Decoupling
C16 A	50		47XU12	1468-00005	5W5Q5	GPIK-50	1FM-45	Diode RF Filter
B	50			1468-00005	5W5Q5	GPIK-50	1FM-45	Diode RF Filter
C17	300	500	47X476	1468-0001	5W5T1	GPIK-100	1FM-31	IF Coupling
C18	5000		47X507	1467-005	1D5D5	811-005	29C1	2nd IF Cathode Bypass
C19	5000		47X507	1467-005	1D5D5	811-005	29C1	2nd IF Decoupling
C20	220	500	47X486	1468-00025	5W5T25	GP2K-220	1FM-325	Diode Load Cap.
C21	2700	500	47X492	1467-0025	1W5D25	GP2M-0027	1FM-225	De-emphasis
C22	68	500	47X471	1469-00007	5W5Q7	GP1K-68	MS-47	Tone Compensation
C23	.04	200	B66403	P288-04	GT504		TM-14	Tone Compensation
C24	.004	200	B66402	P688-004	GT6D4	GP2M-0047	TM-24	Tone Compensation
C25	.005	400	D66502	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C26	220	500	47X468	1468-00025	5W5T25	GP2K-220	1FM-325	AF Amp. Plate Bypass
C27	.02	400	D66203	P688-02	GT4S2		TM-12	Audio Coupling
C28	.001	800	H66102	P1068-001	GT16D1		TM-21	Output Plate Bypass

* Omit 20MFD section.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	36X372	Q13-133X	AT-78	Volume control, tapped at 100KΩ
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions
R2A	3 Meg.	½	40X385	Q13-140	AM-67-2	Tone control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R2A per instructions

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

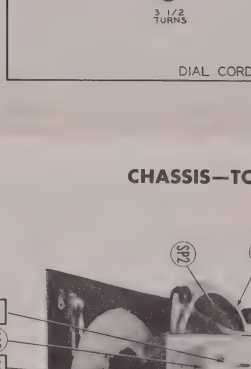
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: MEISSNER PART No.	
L6	Fil. Choke	0Ω		9A2044		
L7	Fil. Choke	0Ω		9A2044		
L8	Parasitic Suppressor	0Ω		9A1940		Wound on 10Ω resistor
L9	FM 1st IF	1.5Ω	.5Ω	9A2037		
L10	AM 1st IF	12Ω	12Ω	9A2038	16-6678	
L11	2nd IF FM	.6Ω		9A1999		
	AM	13Ω	13Ω			
L12	Ratio Det. Transformer	3Ω	0Ω	9A2036		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA:	NOTES
M1	Bayonet	6-8	.15	Brown	7A103		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M2	Switch	2A375	AM-FM-Phono
M3	2 Gang Var. Cap.	14A208	(14-520MMF, 24-204MMF)
A6	Trimmer	17A256	BC Ant. Adj.
A12	Trimmer	17A255	FM Osc. Adj.
	Dial Glass	58X724	
	Dial Pointer	15X250	
	Knob	10A734	



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R3	22KΩ	½	B84223	BTS-22K	Osc. Grid
R4	2700Ω	½	B84272	BTS-2700	Osc. Anode
R5	470Ω	½	B84471	BTS-470	Conv. Plate Decoupling
R6	100KΩ	½	B85104	BTS-100K	AVC Network
R7	68Ω 5%	½	B83680		1st IF Cathode
R8	1200Ω	½	B85122	BTS-1200	1st IF Decoupling
R9	2.2 Meg.	½	B85225	BTS-2.2 Meg.	AVC Network
R10	47KΩ	½	B85473	BTS-47K	Diode Filter
R11	68KΩ	½	B84683	BTS-68K	2nd FM 1F Grid
R12	100Ω	½	B84101		2nd FM 1F Cathode
R13	1000Ω	½	B85102	BTS-1000	2nd FM IF Decoupling
R14	27KΩ	½	B85273	BTS-27K	De-emphasis
R15	6800Ω	½	B84682	BTS-6800	Ratio Det. Diode Load
R16	6800Ω	½	B84682	BTS-6800	Ratio Det. Diode Load
R17	3.6Ω	½	43X233		Ratio Det. Filament (Wire Wound)
R18	150Ω	½	B85153	BTS-15K	Tone Compensation
R19	10 Meg.	½	B85106	BTS-10 Meg.	AF Grid
R20	470KΩ	½	B85474	BTS-470K	AF Plate
R21	470KΩ	½	B85474	BTS-470K	Output Grid
R22	270Ω	1	B84271	BW-1-270	Output Cathode
R23	1000Ω	2	B84102	BW-2-1000	Filter

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA: TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC at .32A	340VCT 6.3VAC .058ADC at 2.7A			53X291	P-8119 †	P-3047 †	PH-70B †

† Add series resistor to reduce plate voltage.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA: TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T2	5.3KΩ	3.6Ω	430Ω	.6Ω	51X144	A-3849	A-2930 #	R0-9 #	# Drill one new mounting hole.

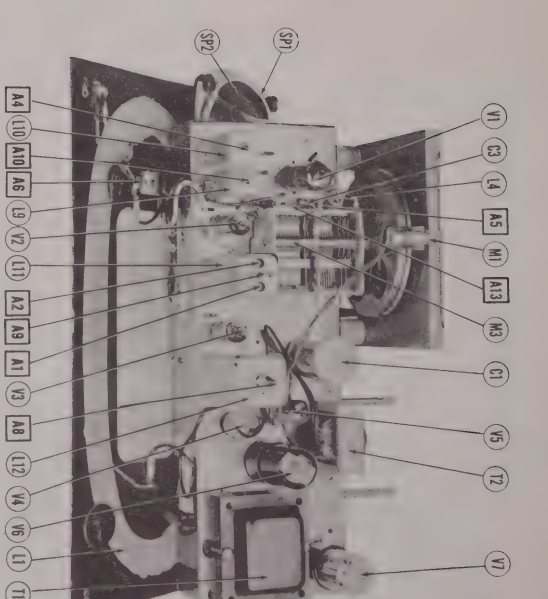
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-803		
SP1	PM	3.6Ω	12A494	MOD. 525V	52A1	
	CONE DIA.	V. C. DIA.				
SP2	5"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: MEISSNER PART No.
L1	AM Loop Ant.	.3Ω	1Ω	9A2046	
L2	FM Ant. Coil	0Ω		9A1956	
L3	AM Osc. Coil	0Ω		9A1997	14-1080
L4	FM Osc. Coil	0Ω		9A2021	
L5	RF Choke	2.5Ω		38A5	

CHASSIS—TOP VIEW



SET 83
FOLDER 14

FIG. 1—TOP VIEW

MODEL 7001

UTAH
MODEL 7001

GENERAL INFORMATION

The Utah Model 7001 is designed to play and automatically change twelve 10-inch or ten 12-inch records, not intermixed. The changer is designed in such a manner that the pickup arm may be moved in any direction, at any time, without damaging the cycling mechanism or affecting the adjustments. The changer operates on 105 to 125 volts, 60 cycle AC.

Manufactured by:

UTAH RADIO PRODUCTS DIVISION • INTERNATIONAL DETROLA CORPORATION

Detroit 9, Michigan

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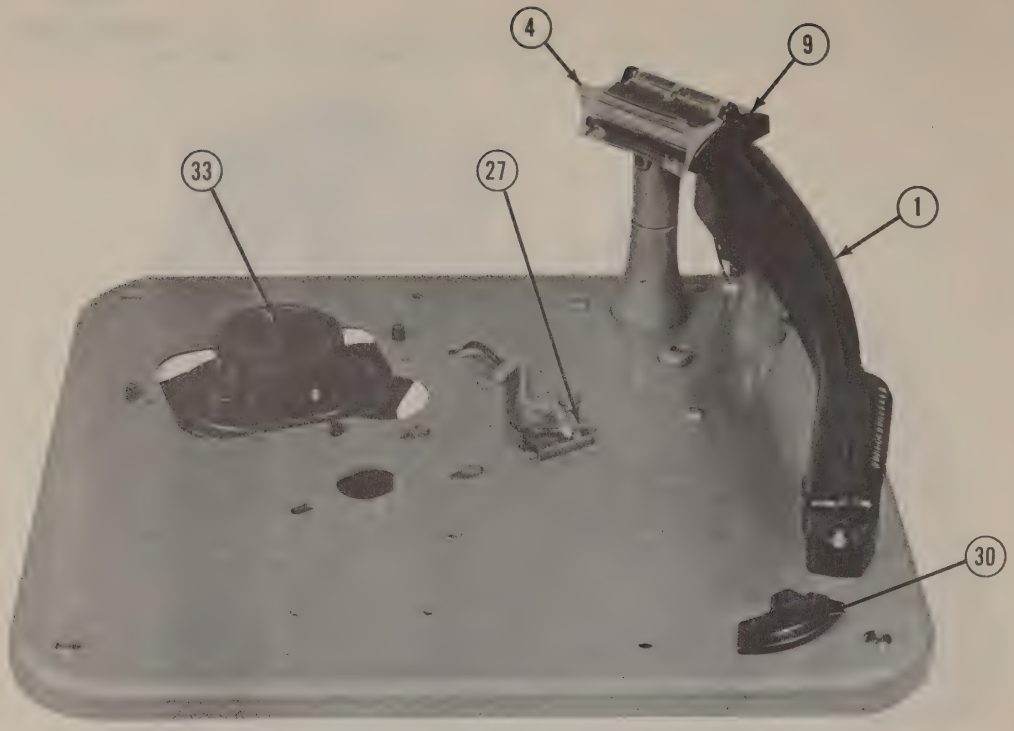

FIG. 2—TOP VIEW LESS TURNTABLE

OPERATING INSTRUCTIONS

1. Release the pickup arm retainer (28) from the pickup arm.

2. Adjust the record support shelf (15) for 10-inch or 12-inch records. This may be done by rotating the record support, in either direction, until it snaps into place. For 10-inch records, the ledge marked "10" should face the spindle. For 12-inch records, rotate the shelf so that the ledge marked "12" is toward the spindle.

3. Flip the toggle (4) back out of the way to allow the records to be placed on the spindle.

4. Place the records on the spindle (16). The record support shelf will support the records at their edge.

5. Lower the toggle to the records.

6. Push the "On-Off" button (30) to the left, or "On" direction. If the changer does not start at once, push the same button momentarily to the left. The changer will then play the entire stack of records.

7. A record may be rejected at any time during playing by simply pushing the control lever momentarily to the left.

8. To shut the changer off on the completion of the last record, allow the changer to go through a complete change cycle, returning the pickup arm to the record:

(a) Move the control button to the "Off" position.
(b) Raise the pickup arm from the record and place it on the arm rest (29).
(c) Flip the toggle (4) backwards.
(d) Carefully remove the records from the turntable. In lifting the records from the turntable, the cap, or the top part of the spindle, will turn as the records are raised against it and will automatically reset itself.

CHANGE CYCLE

The mechanical functions of the change cycle, raising, moving, and lowering the pickup arm, and dropping of records to the turntable, are controlled by the cam (67). This cam is driven during the change cycle by the ratchet (68) on the cam, which engages one of the bosses on the revolving drive wheel (69). The drive wheel is driven from the turntable bearing by means of the spring belt (70). The turntable is rim-driven from the motor.

The change cycle may be started by pushing the control button (30) to "Reject," or by any outward movement of the pickup arm (1) as it nears the center of the record. As the pickup arm moves toward the center of the record, trip lever (41), which has a serrated end, moves with the pickup arm and engages the trip dog attached to the release bracket (59). Any oscillation of the pickup arm as it rides in the eccentric groove of the record, or any outward movement of the pickup by hand, causes the trip

FIG. 3—BOTTOM VIEW

lever (41) to move against the trip dog, which, in turn, actuates the release bracket (59). This allows the cam drive ratchet (68) to drop down on the drive wheel (69) and engage one of the bosses. The cam (67) then rotates with the drive wheel.

As the cam (67) turns, the lift rod (8) rides up an incline to the ledge of the cam and raises the pickup arm off the record. A stud on the adjustment lever (52) is pulled into the groove of the cam as it rotates, causing the pickup arm to swing out and clear the records.

The roller (60) of the ejector lever and shaft (51) follows the outside edge of the cam. The shape of the cam is elliptical at one portion, and, as it turns, this portion of the cam pushes against the roller, turning the ejector shaft (51). The ejector cam (13), which is fastened to the other end of the shaft, thereby actuates the ejector plate (14), pushing a record off the shelf. As the cam continues to turn, the roller of the ejector lever and shaft rides around the cam, returning the ejector lever and shaft, the ejector cam, and the ejector plate to their original positions.

The stud on the arm lever (52), still in the groove of the cam, moves the pickup arm in, positioning it for set down. The lift rod (8) now rides down the incline of the cam, lowering the pickup to the record. The cam drive ratchet (68) engages the release bracket (59), raising the ratchet away from the boss of the drive wheel. The cam ceases rotating and the change cycle is completed.

Removal of the Turntable

The turntable is removed by holding the pulley bearing (36) while turning the turntable counterclockwise. When the threads of the turntable bearing (17) are free of the pulley bearing, the assembly of the turntable and the turntable bearing may be lifted over the spindle. The locking nut (23) holds the turntable to the turntable bearing. The turntable is keyed to the bearing by a keyway on the upper plate of the bearing. When reassembling, the key should be engaged in order that the turntable will be level. Also, when replacing the turntable, care should be taken that the idler wheel of the motor is pushed under the edge of the turntable so that the rim of the turntable will not damage the rubber tire.

Adjustment of Pickup Arm Height

If the needle does not come down far enough to contact the first record on the turntable, or does not rise high enough to clear the top of a complete stack of records, the height of the pickup arm may be adjusted by turning the height adjustment screw (3) until the desired height is obtained.

Removal and Reassembly of the Cam and Drum

Exercise care when removing the cam (67) and drive drum (69) assembly, as the stud (73) which holds this assembly to the plate (40) has a left-hand thread.

A PHOTOFACT "EXPLODED" VIEW

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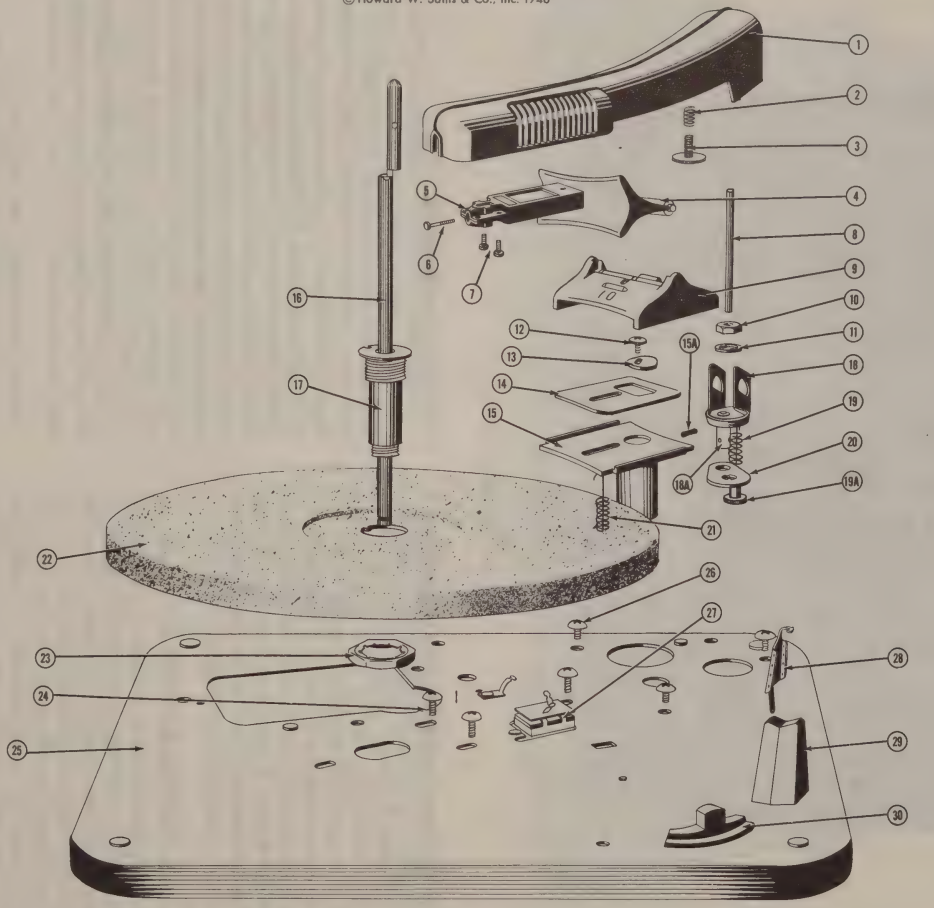

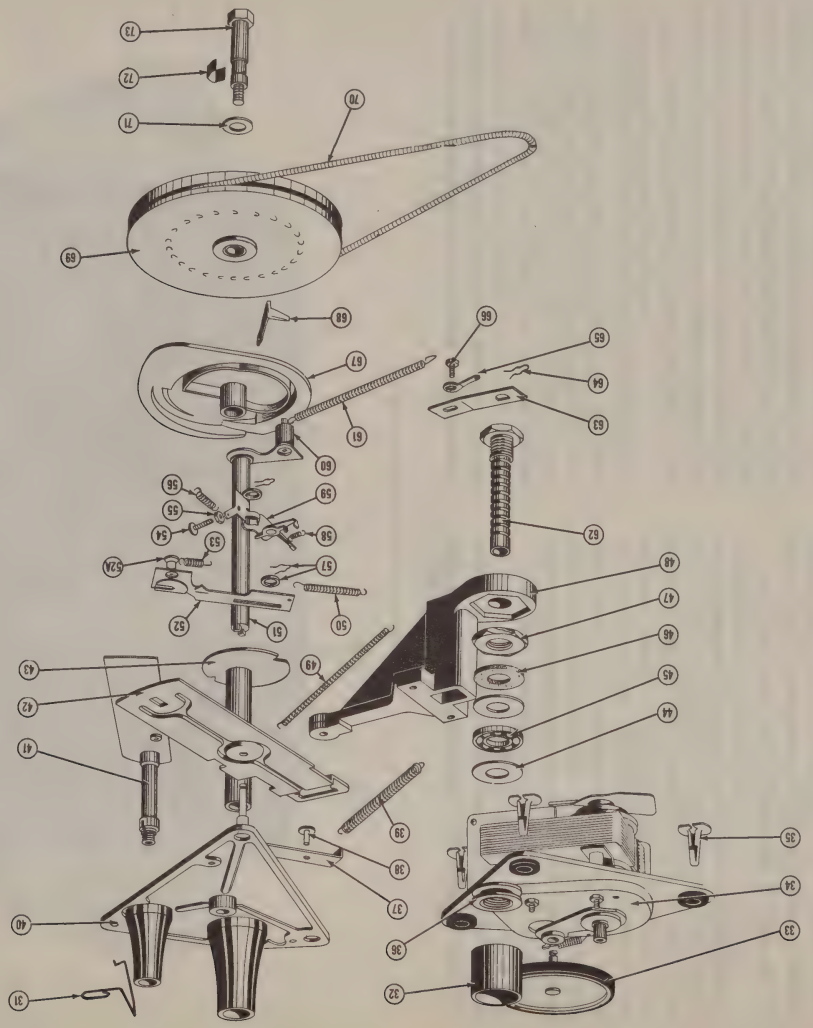
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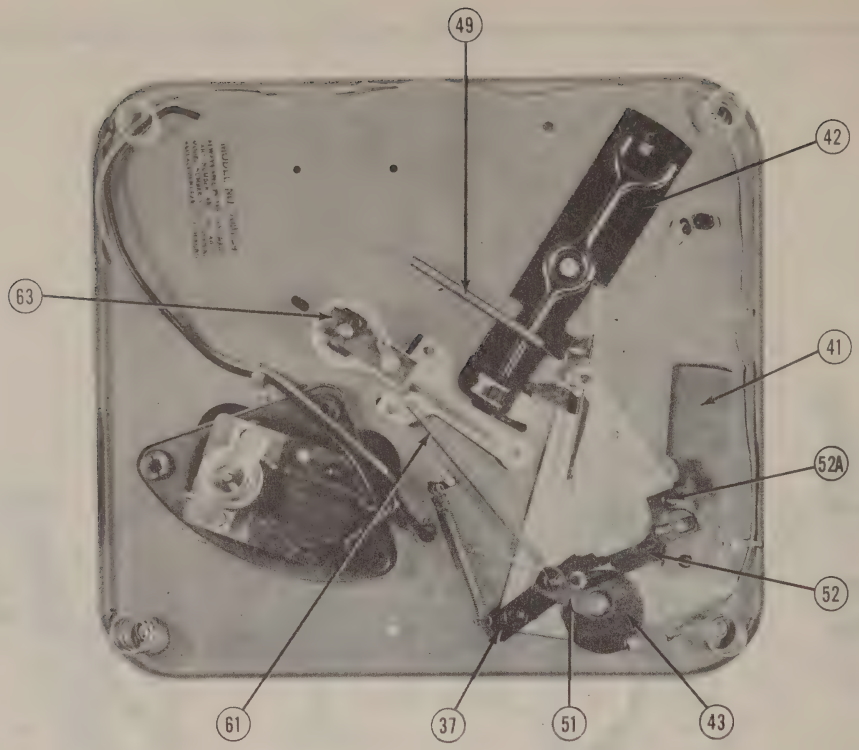


FIG. 4—LESS CAM AND DRUM

When reassembling the cam and drum, several parts must be positioned for correct assembly. If the cam has been removed from the stud, the friction pad (72) will need to be replaced on the smaller part of the stud so that when the cam is pressed on the stud, the pad will fit inside the cam bearing surface. While replacing the cam, the ratchet (68) will need to be held against the cam so that it will be in the right direction from its mounting.

To replace the assembly of the cam, drum, and stud in the changer, first check that the lift shaft (8) is inserted in the pickup arm bearing (41). The pickup arm should be held on its rest (29) by the retainer (28) in order that the trip lever (41) will be stationary and that the cam may be matched to the follower stud (52A), so that the stud is fitting into the widest part of the groove which completely encircles the cam.

While tightening the stud (73), the cam must be held stationary and the release bracket and the ejector roller must be held away from the cam for clearance.

Adjustment of Record Shelf and Spindle Position

The spindle (16) must be the correct distance from the shelf (15), and the shelf must be aligned with the spindle in order that the records will drop properly. These adjustments are made with the standard 10-inch records. The spindle and shelf positions should be such that the records do not fall off either the shelf or the ledge of the spindle. When a record is being ejected, it should fall clear of both the shelf and the spindle ledge.

To adjust the spindle distance, remove the turntable and loosen slightly the three Phillips head screws (24) that hold the center post strut (48) to the base plate (25). With the record shelf in the 10-inch position, carefully place a standard 10-inch record so that it rests on the shelf and on the ledge of the spindle. Adjust the distance by sliding the spindle assembly toward or away from the shelf and retighten the screws (24) after the proper adjustment is obtained.

To adjust the shelf alignment, loosen the set screw (15A) beneath the 12-inch shelf (narrow ledge). Have the 10-inch shelf toward the spindle. Place a standard 10-inch record over the spindle, allowing it to rest on the spindle ledge and record shelf. Be sure the record shelf is in the correct position in relation to the cam of the record adjustment shaft (43) under the motor board. When the 10-inch ledge is toward the spindle, the wider section of the cam (43) should also be toward the spindle. Rotate the shelf slightly in either direction to line up the curvature of the shelf with the record edge; then tighten the set screw (15A).

Adjustment of Pickup Arm Positioning

A simple adjustment to the changer may be made if the pickup arm frequently falls off the edge of a standard record or starts playing a standard record

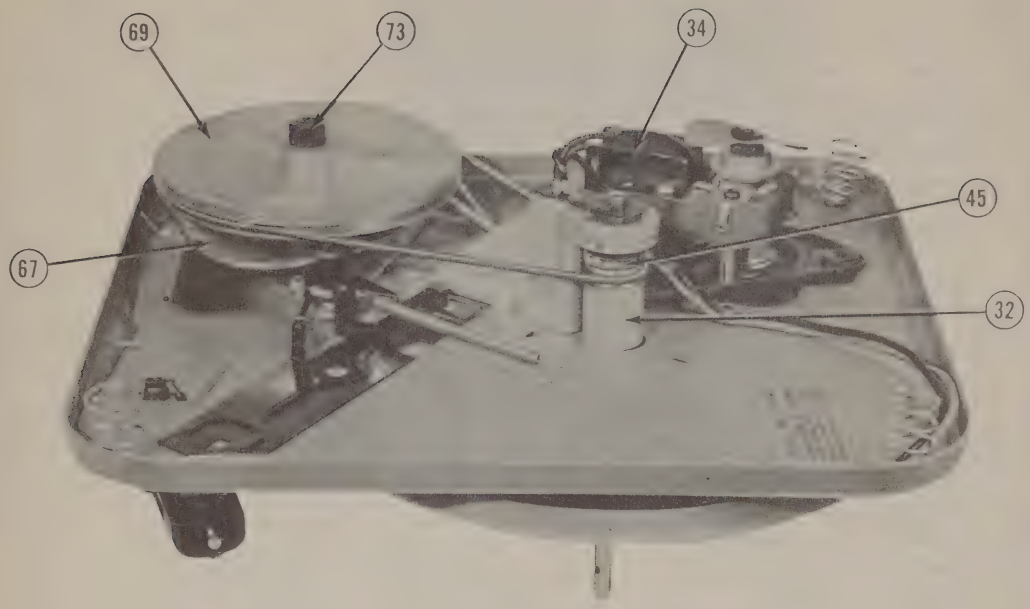


FIG. 5—BOTTOM FRONT VIEW

too far in on the music grooves. This adjustment is made by varying the position of the pivot bracket (18), in reference to the position of the pickup arm bearing plate, by turning the adjustment stud (18A). Adjust so that the needle lands approximately ⅛" in from the edge of a standard record.

TROUBLES

1. *Motor fails, is sluggish, or overheats*

(a) Check for broken wire, defective plug, faulty switch (27), or faulty linkage between control lever (42) and switch.

(b) Check that motor coils are not open or defective.

(c) If oil or grease are present on turntable rim and idler wheel, replace the idler wheel and thoroughly clean the turntable rim with carbon tetrachloride.

2. *Changer fails to cycle properly*

(a) The lead through the pickup arm from the crystal cartridge may not have enough slack to allow the arm sufficient freedom.

(b) The release bracket and trip dog (59) are critical items in the changer. Both should pivot freely on the studs to which they are assembled. If they do not, clean and relubricate with fine oil.

(c) Check to see that the ratchet (68) is able to fall freely, and that it is bent properly to engage a boss on the drum (69).

(d) Check that the serrated lever (41) has not been bent so that the end of it is above the level of the trip dog of release bracket assembly (59).

3. *Changer stalls or is jerky during change cycle*

(a) Check that drive belt (70) is not loose or slipping.

(b) Grease or oil on turntable rim.

4. *Changer cycles continuously*

(a) The release bracket (59) may not be catching the ratchet (68). Check that neither is bent to an improper shape, and that there is tension from the spring (56).

5. *Records do not drop correctly*

(a) Check adjustment of spindle (16) and shelf (15) positions.

(b) Check that the spindle is firmly mounted by the flat spring (63) so that it has no wobble.

(c) The ejector cam (13) may have been reassembled backwards.

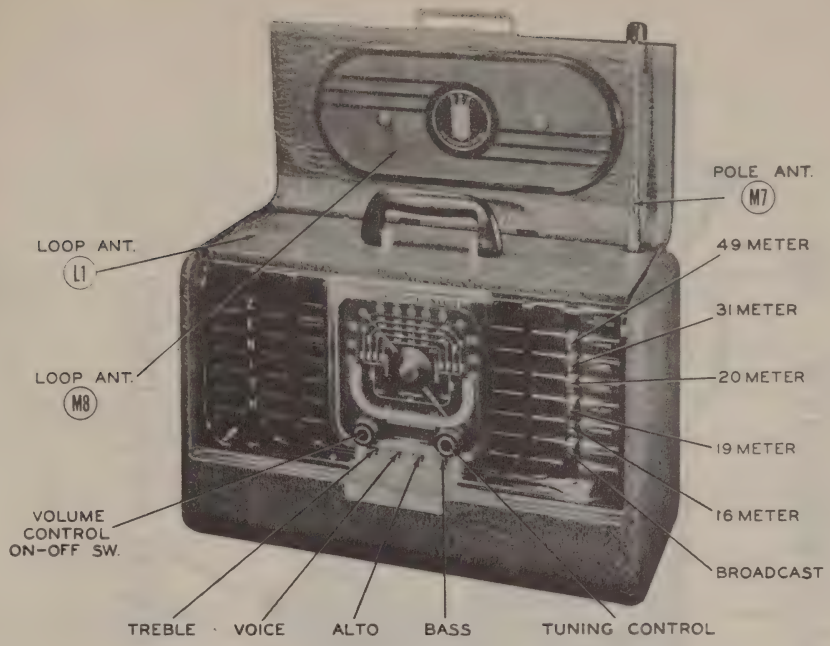
(d) There should be no binding of the record ejector shaft (51), the record ejector plate (14), or the ejector cam (13).

PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	B-50385-2	Pickup arm and pivot assembly (black)
2	A-50458	Adjustment screw spring
3	A-50457	Adjustment screw
4	B-50454-1	Toggle
5	A-50802-1	Cartridge, Astatic L-70 pickup (no lugs grounded)
	A-50802-2	Cartridge, Astatic L-70 pickup (one lug grounded)
	A-50326-2	Cartridge, Astatic LT pickup
	A-50417-1	Cartridge, Astatic L-72 pickup (no lugs grounded)
	A-50417-2	Cartridge, Astatic L-72 pickup (one lug grounded)
6		Needle screw (part of item 5)
7	A-50804	Screw, No. 4-40 fil. head
8	A-50422	Pickup arm lift shaft
9	C-50453-1	Record shelf cover
*10	BN121C05	Hex nut, ¼-28
11	A-50443	Spring washer
12	BS012C01	Screw No. 6-32 x ¼
13	A-50433	Ejector cam
14	B-50452	Record ejector plate
15	C-50451-1	Record support shelf (gray)
	C-50451-2	Record support shelf (beige)
	C-50451-3	Record support shelf (bronze-black)
15A	BA114B01	Set screw, No. 8-32 x 3-1/16
16	B-50480	Spindle assembly
17	B-50334	Turntable bearing assembly
18	B-50390	Pivot bracket and stud
18A		Adjustment stud—needle set-down point
19	A-50353	Pickup arm spring
	A-50354	Adjusting screw
19A	A-50338	T-nut, counterbalance spring
20	A-50446	Pickup arm bearing plate
21	A-50455	Toggle spring
22	C-50496-1	Turntable (gray)
	C-50384-2	Turntable (brown)
23	BN771W02	Palnut, ¾-16
24	BS014D01	Screw, No. 8-32 x 5/16
25		Base plate
*26	BS014B03	Screw, No. 8-32 x 3/16
27	A-50102	On-off switch
28	B-50468	Pickup arm retainer
29	A-50469-1	Pickup arm rest
30	A-50445-1	Button and retaining spring assembly
31	B-50467	Retainer spring
32	A-50495	Turntable bearing spacer
33	X-50822-1	Drive wheel (for C-50470-5 motor)
	X-50822-2	Drive wheel (for C-50383-1 and C-50383-2 motors)
34	C-50383-1	Phono motor (with drive wheel)
	C-50383-2	Phono motor (with drive wheel)
	C-50470-5	Phono motor (with drive wheel)
35	B-50462	Snap fastener for motor
	A-50186-2	Motor mounting grommets
36	A-50946	Pulley bearing
37		Index arm
38		Rivet
39	A-50032	Indexing spring
40	B-50490-1	Ejector and pickup arm mounting plate assembly (gray)
	B-50490-2	Ejector and pickup arm mounting plate assembly (beige)
	B-50490-3	Ejector and pickup arm mounting plate assembly (bronze-black)
41	B-50349	Pickup arm trip lever
42	C-50368	On-off-reject lever
43	B-50483	Record adjustment shaft
44	A-50497	Thrust washer
45	A-50907	Ball bearing, thrust
46	BF24WYA1	Felt washer
47	A-50494	Nut, strut bearing
48	D-50481	Strut, center post
49	A-50471	Ejector return spring
50	A-50076	Pickup arm lead-in and reject spring
51	A-50430	Ejector shaft assembly
52	B-50337	Adjustment lever assembly
53	A-50867	Trip assembly spring
*54	BS212J02	Screw, No. 6-32 x ⅜ r.h.
*55	BN120M02	Hex nut, No. 6-32
56	A-50076	Pickup arm lead-in and reject spring
*57	A-50832	Washer, 5/16 x .167 x .025 thick
	A-51163	Spring clip
58	A-50339	Pawl spring (ratchet release)
59	B-50348	Release bracket assembly
60	A-50437	Roller
61	A-50471	Ejector return spring
62	B-50332	Strut bearing
63	A-50499	Flat spring
64	B-55380-1	Spring clip
*65	A-55340	Solder terminal
66	BS914C01	Screw, No. 8-32 x ¼ hex head
67	B-50346	Pickup arm cam assembly
68		Cam drive ratchet (part of item 67)
69	C-50700	Drive drum
70	B-50137	Drive belt assembly
71	A-55179	Flat washer, ⅜ x .361 x .005 thick
72	A-50058	Cam friction pad
73	B-50486	Cam stud

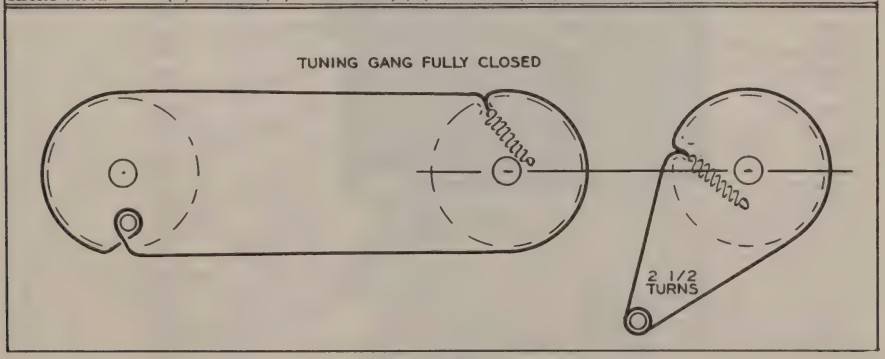
*Standard item; not stocked or replaceable.

ZENITH
MODEL G500 (Ch. 5G40)



ZENITH MODEL G500

TRADE NAME	Zenith, Model G500 (Ch. 5G40)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	Three Power Operated Portable Multi-Band Superheterodyne Receiver with Loop Antenna
TUBES(FIVE)	Types 1U4 RF Amp., 1L6 Converter, 1U4 IF Amp., 1S5 DET-AVC-AF, 3V4 Power Output
POWER SUPPLY	110-120 or 220-240 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply in Pack Form
RATING	.15 Amp. at 117 Volts AC or 55MA at 9 Volts DC and 17MA at 90 Volts DC
TUNING RANGE-BROADCAST	535-1620KC
SHORT WAVE	(#1) 6-6.2MC (#2) 9.45-9.75MC, (#3) 11.5-12.1MC, (#4) 14.9-15.5MC, (#5) 17.5-18.1MC



DIAL CORD DRIVE

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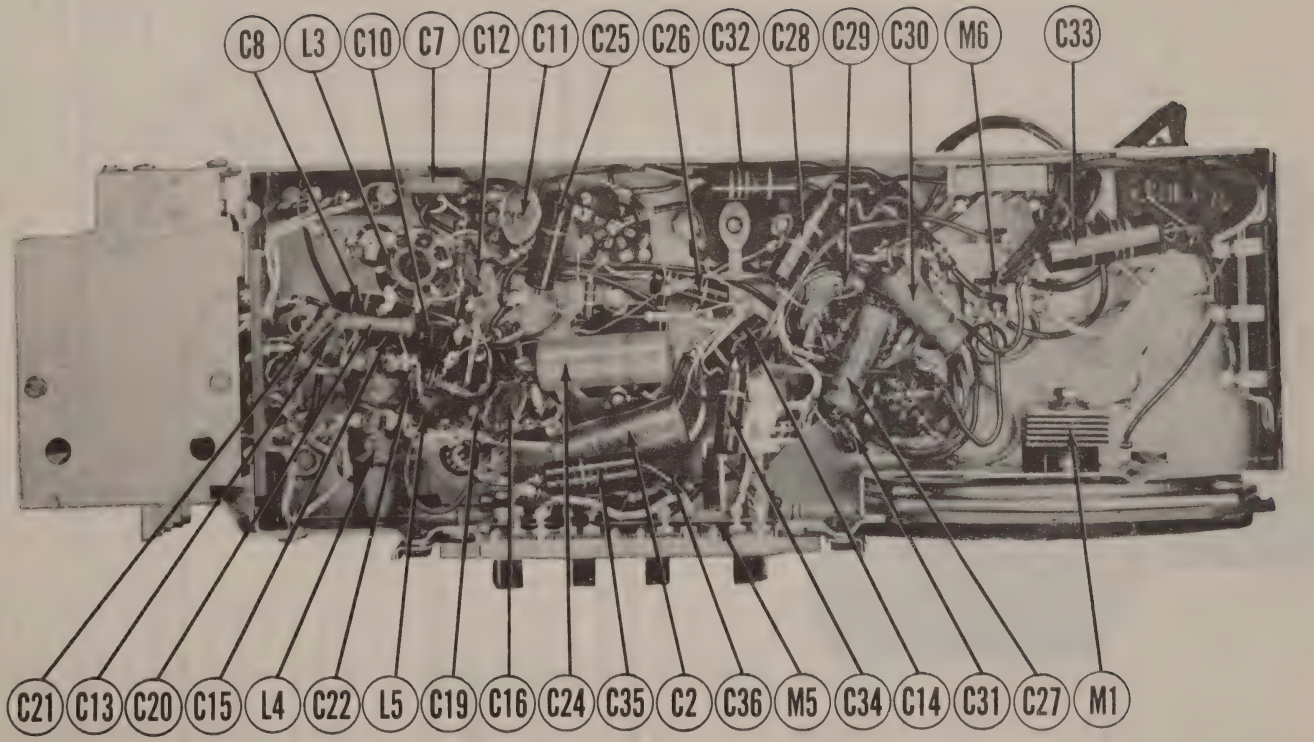
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L3
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C12
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C25
C26
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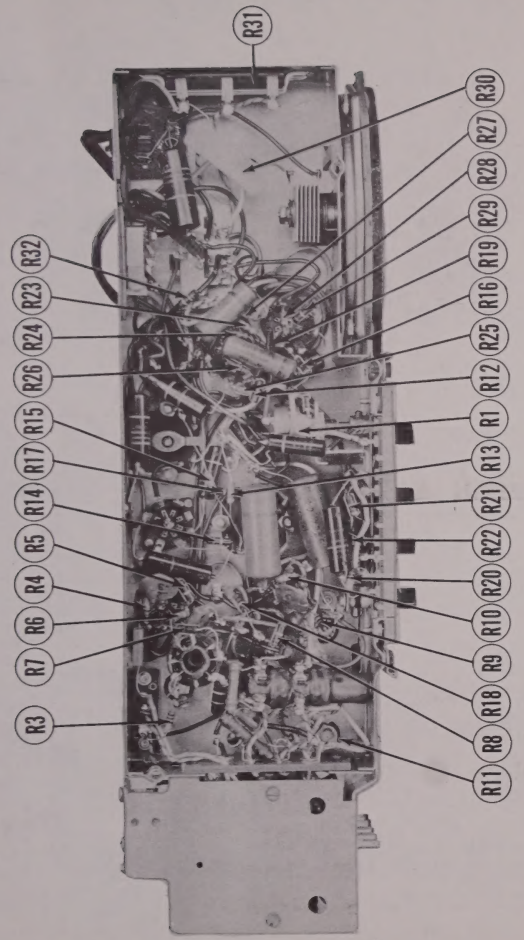

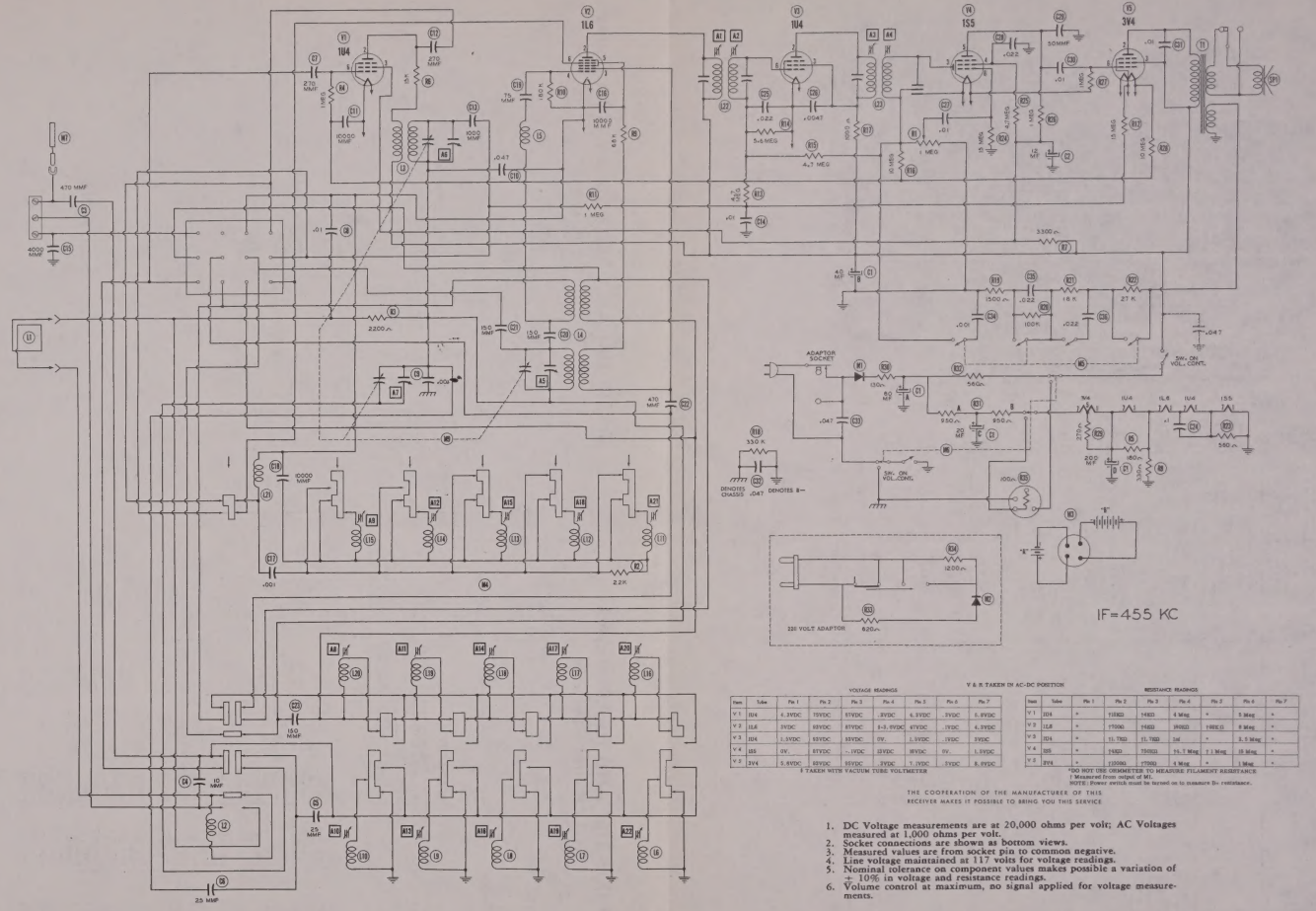

V & R TAKEN IN AC-DC POSITION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V-1	1U4	4.3VDC	70VDC	61VDC	.8VDC	6.3VDC	.2VDC	1.8VDC
V-2	1L6	2VDC	83VDC	87VDC	3-0.5VDC	47VDC	.1VDC	6.5VDC
V-3	1S4	1.5VDC	83VDC	58VDC	0V.	1.5VDC	.1VDC	2VDC
V-4	1S5	0V.	83VDC	-1.5VDC	.8VDC	85VDC	0V.	1.8VDC
V-5	3V4	5.8VDC	95VDC	95VDC	.2VDC	7.1VDC	.5VDC	8.8VDC

† TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V-1	1U4	*	115KΩ	145Ω	4 Meg	*	5 Meg	*
V-2	1L6	*	170Ω	94Ω	190KΩ	190KΩ	8 Meg	*
V-3	1S4	*	11.7Ω	11.7Ω	1M	*	8.5 Meg	*
V-4	1S5	*	190Ω	170Ω	11.7 Meg	2.1 Meg	10 Meg	*
V-5	3V4	*	1100Ω	170Ω	4 Meg	*	1 Meg	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
‡ Measured from output of M1.
NOTE: Power switch must be turned on to measure B+ resistance.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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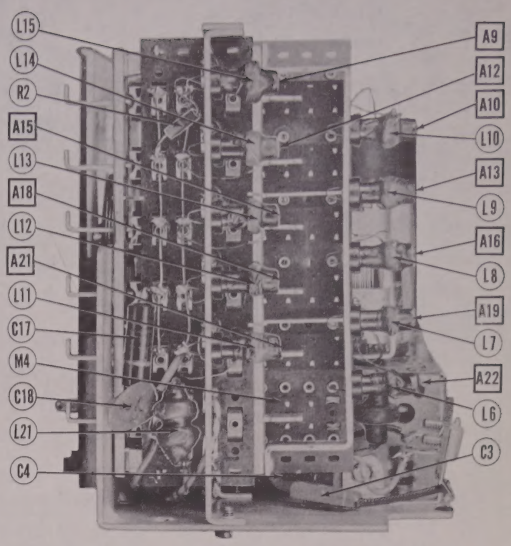
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer parallel with base of dial.
Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (Grid) of 1L6 (V2). Low side to B-.	455KC (400 ~ Mod.)	BC (bottom button)	600KC	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce hum modulation.
2.		Loop	1600KC	"	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	"	1400KC	"	A6, A7	"
4.	3ft. of wire	Connect high side of signal generator to 3 ft. of wire placed approximately 1 ft. from extended whip antenna. Low side not connected.	6.1MC	49 meter (top button)	6.1MC	"	A8	Adjust for maximum output.
5.	"	"	"	"	"	"	A9, A10	Rock tuning gang while adjusting A9 and A10 for maximum output.
6.	"	"	9.6MC	31 meter (second button from top)	9.6MC	"	A11	Adjust for maximum output.
7.	"	"	"	"	"	"	A12, A13	Rock tuning gang while adjusting A12 and A13 for maximum output.
8.	"	"	11.8MC	25 meter (third button from top)	11.8MC	"	A14	Adjust for maximum output.
9.	"	"	"	"	"	"	A15, A16	Rock tuning gang while adjusting A15 and A16 for maximum output.
10.	"	"	15.2MC	19 meter (third button from bottom)	15.2MC	"	A17	Adjust for maximum output.
11.	"	"	"	"	"	"	A18, A19	Rock tuning gang while adjusting A18 and A19 for maximum output.
12.	"	"	17.8MC	16 meter (second button from bottom)	17.8MC	"	A20	Adjust for maximum output.
13.	"	"	"	"	"	"	A21, A22	Rock tuning gang while adjusting A21 and A23 for maximum output.



PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	1U4	1U4	6AR	
V2	Converter	1L6	1L6		
V3	IF Amp.	1U4	1U4	6AR	
V4	DET. -AVC-AF	1S5	1S5	6AU	
V5	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	150	22-1741	AFI284D40R	UP642I5X		D5180	▪ Filter
B	40	150			20			▪ Filter
C	20	150						▲ Filter
D	200	10						Filament Bypass
C2	12	150	22-2056	PRS150/12	BRI215		UT-121	Decoupling
C3	470	500	22-1390	1468-0005	5W5T5	GP2K-470	1FM-35	Ant. Coupling
C4	10		22-1953	1468-00001	5W5Q1	GP1K-10	MS-41	Ant. Coupling
C5	25		22-1392	1469-000025	5R5Q25	NPOL-25	MS-425	Fixed Padder
C6	25		22-1392	1469-000025	5R5Q25	NPOL-25	MS-425	Fixed Trimmer
C7	270	500	22-2058	1468-00025	5W5T25	GP2K-270	1FM-325	RF Coupling
C8	.01	400	22-1784	P488-01	PTE4S1	GP2-335-01	TM-11	Ant. Isolation
C9	.001	400	22-1839	P688-001	PTE6D1	GP2L-001	TM-21	RF Bypass See Note
C10	.047	400	22-1775	P488-047	PTE4S5		TM-15	RF Bypass
C11	10000		22-3	P488-01	PTE4S1	821-01	36C1	AVC Filter
C12	270	500	22-2058	1468-00025	5W5T25	GP2K-270	1FM-325	RF Coupling
C13	1000	500	22-1888	1468-001	1W5D1	GP2L-001	1FM-21	RF Coupling
C14	.01	400	22-1846	P488-01	PTE4S1	GP2-335-01	TM-11	AVC Filter
C15	4000		22-4	1467-004	1D5D4	811-005	29C1	Ant. Isolation
C16	10000		22-3	P488-01	PTE4S1	821-01	36C1	Conv. Screen Bypass
C17	.001	400	22-1839	P688-001	PTE6D1	GP2L-001	TM-21	RF Coupling
C18	10000		22-3	P488-01	PTE4S1	821-01	36C1	DC Blocking
C19	75		22-1746	1468-000075	5W5Q7	GP1K-75	1FM-475	Osc. Grid Cap.
C20	150		22-1740	1468-00015	5W5T15	GP2K-150	1FM-315	Osc. Grid Cap.
C21	150		22-1739	1469-00015	5R5T15	NPO-334-150		Fixed Trimmer
C22	470	500	22-1390	1468-0005	5W5T5	GP2K-470	1FM-35	Osc. Feedback
C23	150		22-1740	1469-00015	5R5T15	NPO-334-150		Fixed Trimmer
C24	.1	400	22-1777	P488-1	PTE4P1		TM-1	Conv. Fil. Bypass
C25	.022	200	22-2071	P488-022	PTE4S2		TM-12	AVC Filter
C26	.0047	400	22-1783	P688-0047	PTE6D5	GP2M-0047	TM-25	IF Coupling
C27	.01	600	22-1779	P668-01	PTE6S1	GP2-335-01	TM-11	Audio Coupling
C28	.022	400	22-2072	P488-022	PTE4S3		TM-12	AF Amp. Screen Bypass
C29	50		22-1674	1468-00005	5W5Q5	GP1K-50	1FM-45	AF Amp. Plate Bypass
C30	.01	600	22-1779	P688-01	PTE6S1	GP2-335-01	TM-11	Audio Coupling
C31	.01	600	22-1779	P688-01	PTE6S1	GP2-335-01	TM-11	Output Plate Bypass
C32	.047	400	22-1775	P488-047	PTE4S5		TM-15	Line Isolation
C33	.047	600	22-1844	P688-047	PTE6S5		TM-15	Line Filter
C34	.001	400	22-1839	P688-001	PTE6D1	GP2L-001	TM-21	Tone Compensation
C35	.022	200	22-2071	P488-022	PTE4S2		TM-12	Tone Compensation
C36	.022	200	22-2071	P488-022	PTE4S2		TM-12	Tone Compensation

Note. Not used in all models.

SET 83

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	63-3037 #	QII-137 #		Volume control
B	Switch		Not Req.	76-2		Attach to R1A per instructions.

Use original lever and bushing to actuate on-off indicator.

FOLDER 16

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	63-1842	BTS-22K	RF Coil Shunt
R3	2200Ω	½	63-1800	BTS-2200	Ant. Isolation
R4	1 Meg.	½	63-1912	BTS-1 Meg.	RF Grid
R5	180Ω	½	63-1754	BW-½-180	Filament String
R6	15KΩ	½	63-1835	BTS-15K	RF Plate
R7	3300Ω	½	63-1807	BTS-3300	Decoupling
R8	330Ω	½	63-1764	BW-½-330	Filament String
R9	68KΩ	½	63-1863	BTS-68K	Osc. Anode
R10	180KΩ	½	63-1880	BTS-180K	Osc. Grid
R11	1 Meg.	½	63-1912	BTS-1 Meg.	AVC Network
R12	15 Meg.	½	63-1961	BTS-15 Meg.	Voltage Divider
R13	4.7 Meg.	½	63-1940	BTS-4.7 Meg.	AVC Network
R14	5.6 Meg.	½	63-1943	BTS-5.6 Meg.	Voltage Divider
R15	4.7 Meg.	½	63-1940	BTS-4.7 Meg.	AVC Network
R16	10 Meg.	½	63-1954	BTS-10 Meg.	Voltage Divider
R17	1000Ω	½	63-1785	BTS-1000	IF Decoupling
R18	330KΩ	½	63-1891	BTS-330K	Isolation
R19	1500Ω	½	63-1792	BTS-1500	Tone Compensation
R20	100KΩ	½	63-1869	BTS-100K	Tone Compensation
R21	18KΩ	½	63-1838	BTS-18K	Tone Compensation
R22	27KΩ	½	63-1845	BTS-27K	Tone Compensation
R23	560Ω	½	63-1775	BTS-560	Filament String
R24	15 Meg.	½	63-1961	BTS-15 Meg.	AF Grid
R25	4.7 Meg.	½	63-1940	BTS-4.7 Meg.	AF Screen
R26	1 Meg.	½	63-1912	BTS-1 Meg.	AF Plate
R27	1 Meg.	½	63-1912	BTS-1 Meg.	Output Grid
R28	10 Meg.	½	63-1954	BTS-10 Meg.	Voltage Divider
R29	270Ω	½	63-1761	BW-½-270	Filament String
R30	130Ω	3	63-2018		Surge Limiter, Wire Wound
R31 A	950Ω	5	63-1362		Filter, Wire Wound
B	950Ω	5			Filament Dropping, Wire Wound
R32	560Ω	½	63-1775	BTS-560	Filter
R33	620Ω	15	63-2020		Surge Limiter, Wire Wound See Note 1
R34	1200Ω	8	63-2021		Surge Limiter, Wire Wound See Note 1
R35	100Ω	½	63-1744	BW-½-100	Series B-

Note. Used in 220V voltage adapter.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	7.2KΩ	3.8Ω	265Ω	2Ω SEC. 1 13Ω SEC. 2	306-868				

SPEAKER

ITEM No.	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: ZENITH PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	PM	3.8Ω				
SP1	CONE DIA.	V. C. DIA.	49-668	ST-803 * MOD. P525-V	52A1 †	* Fabricate mounting bracket. † Use universal mounting bracket provided.
SP2	5"	9/16"	308-868			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ZENITH PART No.	MEISSNER PART No.	
L1	Loop Ant.	.9Ω				
L2	Ant. Loading	1.5Ω		8-18047		
L3	RF Coil	6.5Ω	.5Ω	8-15887		BC

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ZENITH PART No.	MEISSNER PART No.	
L4A	Osc. Coil	3Ω	8.2Ω	S-15886		BC
B	Osc. Coil	.5Ω	0Ω			SW
L5	RF Choke	.1Ω		S-14403		
L6	Ant. Coil	.7Ω		S-15880		49 meters
L7	Ant. Coil	.5Ω		S-15879		31 meters
L8	Ant. Coil	.4Ω		S-15878		25 meters
L9	Ant. Coil	.3Ω		S-15877		19 meters
L10	Ant. Coil	.2Ω		S-15876		16 meters
L11	RF Coil	.9Ω		S-15875		49 meters
L12	RF Coil	.6Ω		S-15874		31 meters
L13	RF Coil	.5Ω		S-15873		25 meters
L14	RF Coil	.4Ω		S-15872		19 meters
L15	RF Coil	.3Ω		S-15871		16 meters
L16	Osc. Shunt	.5Ω		S-15885		49 meters
L17	Osc. Shunt	.3Ω		S-15884		31 meters
L18	Osc. Shunt	.2Ω		S-15883		25 meters
L19	Osc. Shunt	0Ω		S-15882		19 meters
L20	Osc. Shunt	0Ω		S-15881		16 meters
L21	RF Shunt	3Ω		S-11052		
L22	1st IF	20Ω	20Ω	95-1148	16-6668	
L23	2nd IF	20Ω	20Ω	95-1148	16-6670	

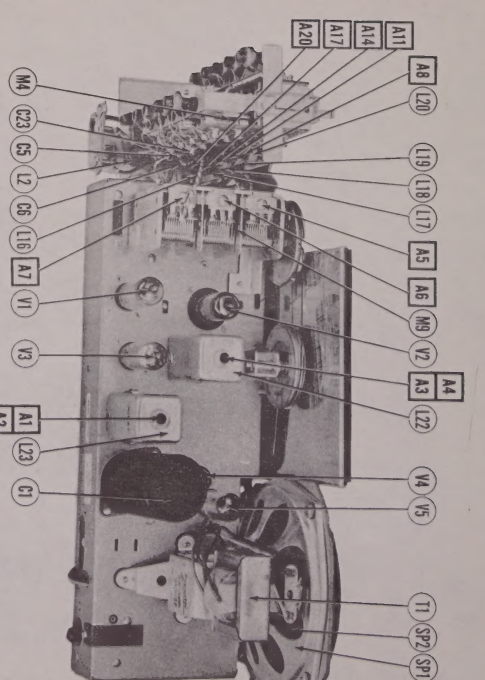
SELENIUM RECTIFIER

ITEM No.	RATING: CURRENT	REPLACEMENT DATA: ZENITH PART No.	SYLVANIA PART No.	NOTES
M1	.067A	212-5	NB-5	
M2		212-9		Used in adaptor unit.

BATTERIES

ITEM No.	VOLTAGE	ZENITH PART No.	REPLACEMENT DATA: EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M3	9V "A" 90V "B"	Z-985			752			G6B60	

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M4	Switch	85-459	Band
M5	Switch	85-460	Tone
M6	Switch	85-450	AC/DC-Battery
M7	Antenna	S-15802	Whip
M8	Antenna	S-16037	Loop
M9	3 Gang Var. Cap.	22-2064	
	Dial Crystal	192-129	
	Dial Pointer	59-155	
	Dial Scale	26-398	

CHASSIS—TOP VIEW